The Boston Medical and Surgical Journal

Table of Contents

March 4, 1915

ORIGINAL ARTICLES.

THE CARNIVOROUS AND HERBIVOROUS TYPES IN MAN. *By John Bryant, M.D.*, Boston..... 321
THE ROENTGEN DIAGNOSIS OF GALL-STONES BY IMPROVED METHODS. *By Lewis Gregory Cole, M.D.*, New York, and *Arial W. George, M.D.*, Boston..... 326
A STUDY OF THE EFFICIENCY OF MIXED TOXINS (COLEY) IN INOPERABLE SARCOMA. A CRITICAL ANALYSIS OF 134 MICROSCOPICALLY PROVEN CASES. *By Torr Wagner Harmer, M.D.*, Boston. (Continued.)..... 331
A STUDY OF DISTURBANCES OF THE STOMACH. *By H. F. Hewes, M.D.*, Boston. (Continued)..... 338

REPORTS OF SOCIETIES.

CLINICAL CONFERENCE OF THE NEUROLOGICAL INSTITUTE, NEW YORK. MEETING OF JANUARY 21, 1915..... 341

BOOK REVIEWS.

Fever—Its Thermotaxis and Metabolism. By Isaac Ott, M.D... 344
Practical Therapeutics. By Hobart Amory Hare, M.D..... 344
On Dreams. By Prof. Sigmund Freud..... 344
Lead Poisoning. By Sir Thomas Oliver, M.D..... 344

EDITORIALS.

THE CLASSIFICATION AND DIAGNOSIS OF DIARRHEA IN BOTTLE-FED INFANTS..... 345
CARNIVOROUS AND HERBIVOROUS TYPES IN HUMAN EVOLUTION.... 346
OPERATION OF THE HARRISON BILL..... 347
PROMPT USE OF DIPHTHERIA ANTI-TOXIN..... 348
THE FAILURE OF AN IMPORTANT BILL..... 348
MEDICAL SCHOOL NUMBER OF THE HARVARD ALUMNI BULLETIN.. 349
MEDICAL NOTES..... 349

CORRESPONDENCE.

THE TREATMENT OF DRUNKARDS WHO BECOME PUBLIC CHARGES. *George W. Gay, M.D.*..... 355
A MISAPPREHENSION CORRECTED. *Vincent Y. Bowditch, M.D.*... 355

MISCELLANY.

SANITARY CONDITIONS AT THE BOSTON IMMIGRATION STATION.... 353
MEMORIAL RESOLUTIONS..... 354
BELGIAN PHYSICIANS' RELIEF FUND..... 356
NOTICES, APPOINTMENTS, RESIGNATIONS, RECENT DEATHS, BOOKS AND PAMPHLETS RECEIVED..... 356

Original Articles.

THE CARNIVOROUS AND HERBIVOROUS TYPES IN MAN:

THE POSSIBILITY AND UTILITY OF THEIR RECOGNITION.*

I. INTRODUCTION AND OUTLINE.

BY JOHN BRYANT, M.D., BOSTON.

IN a previous paper,[1] some account was given of the general considerations which led to the present studies, together with methods and the amount of work done upon the subject suggested by the above title. At about the same time, May, 1914, a bibliography[2] was presented, which in a broad way covered the various aspects of the literature. The time now devoted to the problem has been extended to about three years. A total of some five hundred post-mortems have been observed in this period, chiefly in Berlin and Hamburg, upon which it is expected to make some detailed remarks when the present series of papers has been concluded. In addition to the pathological work, many patients have been seen in the hospitals here and abroad, and much valuable information has been gained through conversations with numerous able American and European clinicians.

On the basis of this preparation, there has been constructed the provisional outline which follows. It is by no means to be considered as final, but it at least provides a method of classification open to proof, and it is felt that it can be corrected and amplified until it has become of distinct value as an aid to clinical medicine, from the point of view not only of diagnosis and treatment, but of prognosis and, still more important, of prevention.

There are of course innumerable ways of classifying the human race. Some one has divided it into those in pursuit of truth and those in pursuit of happiness. Bean has suggested a logical and scientific classification upon the basis of the three germ layers, but this involves three divisions. Can the human race for descriptive purposes be split into two contrasting halves? With his usual perspicacity, the common man has settled the question in the way most obvious to him by employing the terms thin and fat, as witness such nursery rhymes as "Jack Spratt and his wife." It will be shown that this is a sound classification, since it is an outward manifestation of structural differences grouped in the present work under the heading of type: carnivorous and herbivorous. It would be manifestly absurd to claim any originality for the use of these two words. They have been used for scores, almost hundreds, of years as the basis of a broad classification of the lower animals, and Treves and many other workers both before and after him have pointed out that from a developmental point of view man lies midway in the scale between these two extremes; but there the matter has rested.

It is now proposed to apply this old comparative anatomy classification to the genus homo, and to attempt to show not only the logic of its application, but the extent to which it may be made useful: herein lies whatever of originality there may be in the present studies: but credit for

* Being Contributions from the Psychopathic Hospital Number 66 (1915.3). The article was presented in abstract at a meeting of State Hospital physicians and others held at the Psychopathic Hospital, January 4, 1915. (*Bibliographical Note.*—The previous contribution, Number 65 (1915.2), was by Robert M. Yerkes, entitled "The Importance of Social Status as Indicated by the Results of the Point Scale Method of Measuring Mental Capacity," submitted to the *Journal of Educational Psychology.*)

originality is beside the point, for the only question at issue, upon which it is hoped to stimulate discussion is the following: Is the classification here presented of value to clinical medicine?

Among the facts in comparative anatomy which may be taken as proved by work recorded by others in the literature, may be mentioned the following:

1. Body form influences intestinal length, regardless of food habits.
2. Intestinal length varies with the species, regardless of food habits.
3. In a given species intestinal length may vary 100%.
4. This variation depends chiefly upon the digestibility of the food.
5. Offspring of one mother have at birth approximately the same intestinal length.
6. In a given adult individual of one species body form and intestinal length are dependent chiefly upon heredity, the form or digestibility of the food presented during the growing period, and the general habits of life. Sex plays an almost negligible part in this regard.
7. The carnivorous or herbivorous habit is not obligatory. Animals predisposed by their species to one or the other of these extremes of food habit, may within wide limits when forced by necessity reverse their normal manner of life, being thus as it were facultatively carnivorous or the reverse. For example, the polar bear may be forced to live upon kelp, and the cow may exist in comparative comfort upon fish.
8. In the group of mammals, the carnivora are distinguished by a long thin body form, and a short simple type of intestine in which the small intestine is markedly longer than the colon. The herbivora, on the other hand, present a marked contrast; the body form is short and thick, and the intestine long and complex, with the small intestine perhaps barely equal in length to the colon.

In man, the intestine is of intermediate character, nearer to the carnivora than to the herbivora, but here also one finds extremes of difference in intestinal length amounting as in the lower animals to at least 100% at a given age or height.

If now one attempts to divide the genus homo itself into the two groups of herbivorous and carnivorous, the contrast is more striking when the group "omnivorous" is omitted, and since it is merely a combination, always in varying proportions, of the other two factors, its use is confusing. An additional reason for omitting "omnivorous" from a medical classification is that man is normally omnivorous, and the normal man is usually healthy. Medicine is concerned chiefly with the abnormal, the "sports" of development. Much of our progress is doubtless due to these same sports, but to them the ordinary life and ordinary food of the normal man are ill adapted. They require special care for maximum efficiency, and since food is the chief essential to life, the regulation of the diet in these sports becomes a matter of considerable moment. The direction of the change in these cases is usually away from the ordinary or mixed diet, and in the direction of a predominatingly meat or vegetable diet, according to the indications of one or the other type suggested by the body form. The extremes of these types in man present almost as great contrasts as do the tiger and the hippopotamus in the jungle and the zoölogical garden.

If one could go no further than to say that type is proven in the lower animals and that it is susceptible of proof in man, the whole proposition would remain as a museum curiosity. If, however, it can be applied to clinical medicine, it must remain a live issue. It would, for instance, be worth while if it could be shown that by mere observation, before using instruments of precision, one could state even approximately that a given patient has probably had or is likely to have had certain diseases and not others, that his present complaints are so and so, and that in the future this person will be subject to say high blood pressure hypertrophic arthritis or gall-stones, and that person to tuberculosis, atrophic arthritis, or leukaemia. That some at least of these diagnoses and prognoses are possible is suggested by the contents of the following differential tables, and it is hoped that they may prove of interest not only to the physician, but to the employer of labor, and to the life insurance actuaries who must deal so largely, so to speak, in futures.

The tables which follow are arranged, in default of a better method, in alphabetical order, and are intended to bring out the contrasts between the two types in question; therefore they are presented at first with a minimum of reading matter, and will be followed in later issues of this JOURNAL by papers dealing at more length with their contents when repetition will be much less obvious. It is perhaps sufficient for the present to point out two general principles.

The first may be called the law of contrasts, for it seems that where one can prove a given point for one type, its opposite may be expected to prove true in the other type. So-called normal anatomy seems to have been based chiefly upon the herbivorous type. The consideration of the numerous mixed types is purposely omitted from this paper.

The second general principle is, that in a broad way the herbivore would appear from a study of the tables as a positive and the carnivore as a negative organism. The carnivore in short may be regarded either as an inferior or as a very highly specialized organism, for in him the only systems developed or remaining present in excess, are those necessary to the perpetuation of the species: the central nervous system, and the reproductive system. In this connection, it is perhaps worthy of remark that the majority of persons who had reached advanced age before appearing in the series of autopsies referred to,

seemed to be decidedly of the carnivorous type. Extremes in variation of organs, appear also to occur often within the limits of this type.

References to the literature will be given in the later consideration of the tables, but only in cases of special interest, or when sources have not already been indicated in the two papers previously mentioned. Statements for which no other authority is to be found, may be considered as based upon personal observations.

[1] Bryant: BOSTON MED. AND SURG. JOUR., 1914, Vol. clxx, p. 795.
[2] Bryant: Internat. Abstract of Surg., May, 1914,
(As printed this article contained many errors. Corrected reprints have been sent to most of the larger medical libraries.)

TABLE I.

HERBIVOROUS.		BILIARY.		CARNIVOROUS.
Amount secreted, large.....	Plus	..... BILE	Minus	Less abundant
Passes through liver to bile.....	Plus	CHOLESTERIN*	Minus	Retained in circulation by liver acting as a filter. Amount in bile small.
With liver large.....	Plus	.. CIRRHOSIS ..	Plus	With liver small.
Muscular, small, thick.....	Minus	GALL BLADDER	Plus	Atrophic, large, thin, ptotic.
Present in relatively small amounts	Minus	GLYCOCHOLIC ..... ACID* ..... (Contains no sulphur)	Plus	(C_{25} H_{43} NO_6).
Large, high, transverse.....	Plus	..... LIVER	Minus	Small, low, perpendicular.
May be pure cholesterin.....	Plus	. GALL-STONES .	Plus	Stones, if present, always of infectious origin.
(C_{26} H_{45} NO_7 S).....	Plus	TAUROCHOLIC ..... ACID* ..... (Contains sulphur)	Minus	Present in relatively small amounts.

* Facts true for the lower animals.

TABLE II.

HERBIVOROUS.		CARDIO-RENAL.		CARNIVOROUS.
Cholesterin deposits in retina.....	Plus	ALBUMINURIC .. RETINITIS ..	Minus	
Large	Plus	.... AORTA	Minus	Small.
Apoplexy	Plus	ARTERIO- .. SCLEROSIS ..	Minus	
	Plus	... ASCITES ...	Minus	Cardio-renal disease less frequent.
May be extremely high.....	Plus	BLOOD PRESSURE	Minus	Usually low.
Blood content high.....	Plus	CHOLESTERIN	Minus	Blood content lower.
High	Plus	. DIAPHRAGM .	Minus	Low.
	Minus	EOSINOPHILES	Plus	Often +
Large, transverse	Plus	.... HEART	Minus	Small, perpendicular.
	Minus	.. LEUKEMIA ..	Plus	Usually in this type.
	Minus	LYMPHOCYTES	Plus	Usually +
Large, high	Plus	.... KIDNEY	Minus	Small, low.
High tension, fast, full.....	Plus	.... PULSE	Minus	Low tension, slow, weak.
Hemoglobin and count high.....	Plus	RED BLOOD . CORPUSCLES .	Minus	Hemoglobin and count low.
	Minus	STATUS- LYMPHATICUS	Plus	Always of this type.

TABLE III.

HERBIVOROUS.		CHEMICAL.*		CARNIVOROUS.
Easily fatal. No formation of NH_4 from proteids.....	Plus	... ACIDOSIS ...	Minus	Not easily fatal. NH_4 formed in considerable amounts.
In urine +.....	Plus	... CALCIUM ...	Minus	Usually only small amounts.
Percent. in blood and supra-renal high	Plus	CHOLESTERIN	Minus	Percent. in blood and supra-renal low.
Large, light, acid, fermentative....	Plus	.... FAECES	Minus	Small, dark, alkaline, putrefactive.
Relatively small amounts in bile...	Minus	GLYCOCHOLIC ..... ACID ..... (C_{25} H_{43} NO_6)	Plus	Large amounts in bile.
In urine +.....	Plus	HIPPURIC ..... ACID	Minus	Usually absent in urine.
Usually absent in urine.....	Minus	... INDOXYL ...	Plus	In urine often in large amounts.
Formed only from dextrose.....	Minus	... LACTOSE ...	Plus	Formed from proteid also if necessary.
Decreasing with length of fast.....	Minus	NITROGEN ELIMINATION	Plus	Constant during fast.
Usually small amounts only.....	Minus	PHOSPHATES	Plus	In urine +
In bile +.....	Plus	TAUROCHOLIC ..... ACID ..... (C_{26} H_{45} NO_7 S)	Minus	Relatively small amounts in bile.
Usually small amounts only.....	Minus	..... UREA	Plus	In urine +
Always present but in traces only..	Minus	.. URIC ACID ..	Plus	Amount varies with diet: may be high or absent.
Normally alkaline or neutral.....	Minus	.... URINE	Plus	Normally acid.
Not limited.....	Plus	URINARY ACIDITY	Minus	Limited.

* Known to be true in the lower animals, and probably true in human types.

TABLE IV.

HERBIVOROUS.		DUCTLESS GLANDS.		CARNIVOROUS.
Small	Minus	... GENITAL ...	Plus	Large, reproductive functions +
May be large or cystic: adiposis, gigantism, acromegaly	Plus	. HYPOPHYSIS .	Minus	Variations slight.
Usually large	Plus	.. PANCREAS ..	Minus	Usually small.
Calcium balance normal	Plus	PARA-THYROID	Minus	Tetany not infrequent.
Normal or large	Plus	... THYMUS ...	Minus	Usually deficient, may be very large.
Myxoedema	Minus	.. .THYROID ...	Plus	Exophthalmic goitre.
Always large, especially cortex	Plus	SUPRA-RENAL	Minus	Always small, vagotony frequent.

TABLE V.

HERBIVOROUS.		DIGESTIVE.		CARNIVOROUS.
Usually of acquired type, especially in region of gall bladder	Plus	. ADHESIONS .	Plus	Largely congenital as veils, also flexure adhesions frequent.
Small at base, short, tubular	Minus	. APPENDIX ...	Plus	Large at base, long, conical.
Usually fulminating, often fatal	Plus	APPENDICITIS	Plus	Usually chronic and mild.
Long, large, high	Plus	.... COLON	Minus	Short, small, low.
Atonic; sympathetic stimulation in excess causes decreased peristalsis	Plus	CONSTIPATION	Plus	Spastic; vagus stimulation in excess causes increased peristalsis.
Rare	Minus	DUODENAL .... ULCER	Plus	Frequent.
Rare	Minus	GASTRIC ULCER	Plus	Frequent.
Normal	Minus	HEPATIC ... FLEXURE ...	Plus	High or absent.
Normal position, firmly attached	Minus	ILEO-CAECAL .... VALVE	Plus	High or low, loosely attached.
Muscular, long, thick walled	Plus	.. INTESTINE ..	Minus	Short, thin walled.
Infrequent, acquired	Minus	.... PTOSES	Plus	Frequent, congenital.
May be as 1 : 1	Plus	RATIO, COLON TO SMALL INTESTINE	Minus	Often at 1 : 5, never as 1 : 1.
Usually short	Minus	SIGMOID LOOP	Plus	Usually long, may reach to diaphragm.
Normal	Minus	SPLENIC ... FLEXURE ...	Plus	Often high, rarely very low.
Normal, transverse	Minus	... STOMACH ...	Plus	Tubular, long or dilated, often low.
Sympatheticotony its antithesis	Minus	.. VAGOTONY ..	Plus	Always in this type.

TABLE VI.

HERBIVOROUS.		DIET.		CARNIVOROUS.
Normal diet	Plus	CARBO .. HYDRATES ..	Minus	Easily cause gas formation.
Normally acid, fermentative, large.	Plus	.... FAECES	Minus	Normally alkaline, putrefactive, small.
Normal diet	Plus	..... FATS	Minus	Easily cause fat indigestion.
Easily taken in excess	Minus	.. PROTEIDS ..	Plus	Normal diet.

TABLE VII.

		EYE.		
Visible cholesterin deposits	Plus	ALBUMINURIC .. RETINITIS ..	Minus	
Visible cholesterin deposit	Plus	.ARCUS SENILIS.	Minus	
	Minus	. ASTHENOPIA .	Plus	With general asthenia.
Cholesterin a factor?	Plus	.. CATARACT ..	Minus	
Pupil large	Plus	CILIARY MUSCLE	Minus	Pupil small.
	Minus	CONGESTIONS	Plus	Due to poor circulation?
Iris angle wide, lymph flow not obstructed	Minus	.. GLAUCOMA ..	Plus	Lymph outflow easily obstructed.
	Minus	. HYPEROPIA .	Plus	Low blood pressure.
Nose wide, flat	Plus	INTER-OCULAR .. DISTANCE ..	Minus	Nose thin, prominent.
High blood pressure	Plus	.... MYOPIA	Minus	
Cholesterin a factor?	Plus	.. OPACITIES ..	Minus	
External	Plus	.... SQUINT	Plus	Internal.
Visible cholesterin deposits	Plus	.. XANTHOMA ..	Minus	

TABLE VIII.

HERBIVOROUS.		HABITS AND DISEASES.		CARNIVOROUS.
Light wine or beer with low alcohol content, if alcohol is used at all	Minus	... ALCOHOL ...	Plus	Brandy or whiskey and other distilled liquors with high alcohol content preferred.
	Minus	.... DRUGS	Plus	As morphia and cocaine.
Starches, greens, vegetables	Plus	..... FOOD	Plus	Meats, greens, no starches.
Prefers sugar to alcohol	Plus	.... SUGAR	Minus	Prefers alcohol to sugar.

TABLE VIII. (*Continued.*)

HERBIVOROUS.		HABITS AND DISEASES.		CARNIVOROUS.
Infrequent, acute, severe, more often fatal	Plus	. INFECTIONS .	Plus	Frequent, chronic, mild, seldom fatal.
Ulcer and gumma	Plus	... SYPHILIS ...	Plus	General paresis and tabes.
Cardio-renal and mesenchymal tissues	Plus	.. SYSTEMIC ..	Plus	Central nervous system, gastro-intestinal tract, skin, or other epithelial structures.
	Minus	TUBERCULOSIS	Plus	Pulmonary, in over 90% of cases occurs in this type.

TABLE IX.

HERBIVOROUS.		LYMPHATIC.		CARNIVOROUS.
	Minus	... GLANDS ...	Plus	Frequently enlarged.
	Minus	. LEUKAEMIA .	Plus	Usually in this type.
Normal	Minus	.... SPLEEN	Plus	Small or large.
Small	Minus	... TONSILS ...	Plus	Often large.

TABLE X.

HERBIVOROUS.		MENTAL.		CARNIVOROUS.
Sytemic changes, slow onset, usually quiet	Minus	.. DISEASES ..	Plus	Acute onset, sudden psychoses, often violent.
Deductive, slow, persistent	Minus	.. MENTALITY ..	Plus	Inductive, active, changeable.

TABLE XI.

HERBIVOROUS.		ORGANS.		CARNIVOROUS.
Heavy	Plus	..... BONE	Minus	Light.
Normal	Minus	.... BRAIN	Plus	Large, rarely very small, in relation to body weight.
Long, complex	Plus	GASTRO-INTESTINAL	Minus	Short, simple.
	Minus	... GENITAL ...	Plus	Always relatively in excess.
Thin, light	Minus	..... HAIR	Plus	Thick, dark.
Large	Plus	.... HEART	Minus	Small.
Large or cystic	Plus	. HYPOPHYSIS .	Minus	Often small.
Large	Plus	... KIDNEY ...	Minus	Small.
Large	Plus	.... LIVER	Minus	Small.
Usually expanded, often emphysematous	Plus	.... LUNGS	Minus	Usually compressed, often atalectatic.
Normal	Minus	.. LYMPHATIC ..	Plus	Nodes often enlarged or deficient.
Short, thick	Plus	... MUSCLES ...	Minus	Long, thin.
Small	Minus	.... OVARY	Plus	Always large, often cystic.
Large	Plus	.. PANCREAS ..	Minus	Small.
Small	Minus	..... PENIS	Plus	Large.
Often hypertrophied	Plus	.. PROSTATE ..	Minus	Usually small.
Thick, moist, pink	Plus	..... SKIN	Minus	Thin, dry, sallow, pigment +
Normal	Minus	.... SPLEEN	Plus	Large or small.
Large, especially fatty cortex, pigment layer usually +	Plus	SUPRA-RENAL	Minus	Small, with narrow cortex, pigment usually absent.
Small	Minus	.... TESTES	Plus	Large.
Normal or large	Plus	... THYMUS ...	Minus	Small or very large.
Small, often deficient	Minus	... THYROID ...	Plus	Large, often ++
Large, often myomatous	Plus	... UTERUS ...	Minus	Small.

TABLE XII.

HERBIVOROUS.		PHYSICAL.		CARNIVOROUS.
May be large throughout	Minus	.. ABDOMEN ..	Plus	Prominent only below umbilicus.
	Minus	ADAM'S APPLE	Plus	Prominent.
Never in this type	Minus	.. ASTHENIA ..	Plus	Also neurasthenia, myasthenia, etc.
Large	Plus	.... ANKLE	Minus	Small.
Broad, flat	Plus	..... BACK	Minus	Narrow, round.
Heavy	Plus	..... BONE	Minus	Light.
Normal or large from congestion	Minus	.... BREAST	Plus	Absent or large and pendant.
Rounded	Minus	. CHEEKBONE .	Plus	Prominent.
Square	Plus	..... CHIN	Minus	Pointed, long or short.
Usually good	Plus	CIRCULATION	Minus	Usually bad, extremities frequently cold and often purple in color.
Wide	Plus	COSTAL ANGLE	Minus	Very narrow.
Thick, wide, simple	Minus	..... EAR	Plus	Thin, long, convoluted.
Thick, short	Minus	EXTREMITIES	Plus	Thin, long.
Far apart	Plus	..... EYES	Minus	Close together.
Often excessive	Plus	..... FAT	Minus	Usually deficient.
Short, wide	Minus	... FINGERS ...	Plus	Long, tapering.
Short, wide	Minus	..... FOOT	Plus	Long, tapering.
Usually square	Plus	.. FOREHEAD ..	Minus	Often receding.
Wide, often square	Minus	..... HAND	Plus	Long, tapering.

TABLE XII. (*Continued.*)

HERBIVOROUS.		PHYSICAL.		CARNIVOROUS.
Normal, round, square or sugar-loaf	Plus	..... HEAD	Minus	Long, large, rarely microcephalic.
Short, thickset	Minus	... HEIGHT...	Plus	Tall, lanky.
Often very large	Plus	..... HIPS	Minus	Usually small.
Often emphysematous	Plus	.... LUNGS	Minus	Often atelectatic.
Heavy, short, thick, muscle belly long and tendon short	Plus	... MUSCLES ...	Minus	Slender, long, thin, muscle belly short and tendon long.
Short, thick, muscles heavy	Minus	..... NECK	Plus	Long, thin, muscles slender.
Short, wide, flat	Minus	.... NOSE	Plus	Long, thin, prominent.
Arch low	Minus	... PALATE ...	Plus	Arch high.
Wide, flat, rigid	Plus	.... PELVIS	Minus	Small, round, flexible.
Usually slight	Minus	... PIGMENT...	Plus	Often excessive.
Usually acquired if present	Minus	... PTOSES ...	Plus	Usually present, often congenital.
Normal, flat	Minus	.. SCAPULAE ..	Plus	Angel wing.
Heavy, wide, square	Plus	. SHOULDERS .	Minus	Usually narrow, sloping.
Thick, pink, moist	Plus	..... SKIN	Minus	Thin, sallow, dry.
Abundant, odorless, alkaline	Plus	.... SWEAT	Minus	Scanty, offensive, acid.
Full, tubular, barrel-shaped	Plus	... THORAX ...	Minus	Flat, peg-top.
Seldom small	Plus	.... WAIST	Minus	Often very small.
Often excessive	Plus	... WEIGHT ...	Minus	Usually deficient.
Thick	Plus	.... WRIST	Minus	Thin.

TABLE XIII.

HERBIVOROUS.		REPRODUCTIVE.		CARNIVOROUS.
Normal or large from congestion	Minus	.... BREAST	Plus	Absent or large and pendant.
Small, seldom cystic	Minus	.... OVARY	Plus	Large, cysts frequent and may be of great size.
Small	Minus	..... PENIS	Plus	Large.
Hypertrophied frequently	Plus	.. PROSTATE ..	Minus	Small.
Labor often difficult; pelvis rigid, flat	Minus	REPRODUCTION	Plus	Labor usually easy; pelvis flexible, round.
Small	Minus	.... TESTES	Plus	Large.
Large, frequently myomatous	Plus	... UTERUS ...	Minus	Small.

TABLE XIV.

HERBIVOROUS.		SKELETAL.		CARNIVOROUS.
Hypertrophic	Plus	.. ARTHRITIS ..	Plus	Atrophic.
Heavy	Plus	..... BONE	Minus	Light.
Wide	Plus	COSTAL ANGLE	Minus	Narrow.
Wide	Plus	COSTO-VERTEBRAL .... ANGLE	Minus	Narrow.
When present, usually occurs in this type	Plus	LUMBO-SACRAL JOINT INVOLVE- ..... MENT	Minus	
Wide, rigid, flat	Plus	.... PELVIS	Minus	Narrow, flexible, round.
Heavy, wide	Plus	VERTEBRAL . PROCESSES .	Minus	Light, narrow.
	Minus	SACRO-ILIAC JOINT INVOLVEMENT	Plus	When present, usually occurs in this type.
Heavy	Plus	. VERTEBRAE .	Minus	Light.

THE ROENTGEN DIAGNOSIS OF GALL-STONES BY IMPROVED METHODS.

BY LEWIS GREGORY COLE, M.D., NEW YORK.

Professor of Roentgenology, Cornell University Medical College;

AND

ARIAL W. GEORGE, M.D., BOSTON,

Assistant Professor, Department of Roentgenology, Tufts College Medical School, Boston.

UP to about three years ago gall-stones were detected by the Roentgen method of examination in such a small percentage of the suspected cases that most Roentgenologists, including ourselves, did not recommend the examination, and made it only when urged to do so. Several of us found, however, that gall-stones containing calcium could be detected much more frequently than we had supposed, and this discovery stimulated the search for them. As yet, only a few Roentgenologists had published reports on gall-stones.[1] In 1913, however, four observers reported almost simultaneously that gall-stones could be detected Roentgenographically in from 50 to 70% of the cases in which they were really present.[2] This estimate of the percentage of gall-stones was obtained in two ways. Case reported detecting 50 in 1000 cases. Cole reported detecting 20 in 499 cases. As these observations were made during about the same period, and each reported independently of the other, it was significant that the percentage was almost identical in the two reports.

It is a well recognized fact that gall-stones are found in 10% of all adult cases submitted to post-mortem examination, and as we were able to detect them in 5% of the cases in a routine

gastro-intestinal examination, we therefore concluded that we could find them in about one-half of the cases where they were present.

Pfahler estimated that he could detect gall-stones in 74% of the cases, which according to him, was 24% more than could be obtained by other Roentgenologists.

His percentage was based on 29 cases operated on for gall-stones, in 27 of which stones were found. He had reported findings in twenty of these, but had been unable to detect them in seven where they existed, and in two cases he had reported probable stones wherein no stones were found,—a record of nine erroneous diagnoses.

Therefore, what Pfahler really reported was 31% of erroneous diagnosis, rather than a percentage of accuracy.

When stones are detected by Roentgen methods, an operation for their removal is almost universally assured, and unless there are errors in interpretation, the stones are found. But if no stones are found through these methods, the operation is not so likely to be performed, and of this case one has no knowledge of whether or not stones are present. Therefore such a method of estimating the percentage is not accurate.

A series of cases might be examined, however, in the manner employed by Brewer and Cole,[3] in gastro-duodenal lesion, viz: If by using all other methods combined, the surgeon determines that gall-stones are present, he will operate for them regardless of the Roentgen findings. The Roentgenologist makes his examination, making a definite negative or positive diagnosis exclusively on the Roentgen findings and the operation, and then compares the findings. This method of estimating would give one an accurate percentage of the cases that are detectable by Roentgen rays.

Among the Roentgen plates exhibited at the last meeting of the Roentgen Ray Society, George showed 15 cases of gall-stones, each presenting faint shadows of the calculi. Some of these were so indistinct that even a keen observer would have failed to detect them, and Cole was even doubtful of the significance of the shadows in some cases, although in a previous communication,[4] he himself had described and attempted to illustrate an article on gall-stones with two or three similar Roentgen plates.

Since we have paid close attention to the gall-bladder region in the routine gastro-intestinal examinations, studying the cases observed by this method, and reviewing previous Roentgen plates of the gall-bladder, much valuable information has been obtained which has led us to believe that we can detect stones at least twice as frequently as before. After having considered that we detected them in 50% of the cases, it would now appear that we can show them in all cases where they are present.

One of the writers (Cole) new believes that far more than 10% of the cases presenting themselves for a Roentgen examination of the stomach and the gall-bladder region, have gall-stones, and therefore that one is not justified in estimating the percentage of detectable gall-stones in the manner previously employed by him and Case. Having once made this error, Cole hesitates to base the percentage of detectable gall-stones on anything less than such a test as that employed by Brewer and Cole on gastro-duodenal lesions. But we believe this method is sufficiently accurate to justify a careful Roentgen examination of every patient over forty who complains of gall-bladder or gastric symptoms.

A positive Roentgenologic diagnosis can be made in such a large number of the cases where gall-stones are present, that the negative diagnosis has become far more important than it was previously considered to be.

The technic is not radically different from that employed for soft tissue detail in any other part of the body; but it requires conscientious attention to the most minute points, and one must not be satisfied with the Roentgen plates, unless detail is shown to the greatest possible degree. Roentgen plates obtained by improved technic, show extraordinary detail; in two cases even the pelvis of the kidney, the blood-vessels going to and from it, and the upper part of the ureter were remarkably distinct.

Our opinions differ as to the advisability of catharsis prior to the examination. One of the writers (George) considers that the gas usually resulting from a cathartic is a more disturbing factor in the interpretation of the Roentgen plate than the fecal content of the colon. This, he thinks, may aid in determining the location of the gall-bladder. His colleague (Cole) on the other hand, thinks that a thorough catharsis and total abstinence from food for twelve hours prior to the examination is very essential; also that the gas in the colon often serves to accentuate the calculi, and in a previous communication,[5] he has advocated the artificial injection of air into the colon in some doubtful cases as a means by which shadows of gall-stones may be accentuated or identified.

The use of the Coolidge tube enables one to obtain an accuracy of penetration which is unattainable with a standard tube. Roentgen plates showing brilliant bone detail with considerable density of the soft parts are not desirable for the diagnosis of gall-stones. Soft "monotonic" Roentgen plates obtained with the Coolidge tube, are deprecated by some critics because marked contrast in the bony structure is lacking; but they show remarkable gradations in the soft tissue—a result for which one strives when in search of gall-stones.

Minor condemned fine Roentgen plates of the lungs as compared with the fluoroscopic image, because they showed so much detail in the soft parts as to make them difficult to interpret. It is the interpretation of these very details that increases the accuracy of diagnosis, whether it

be the chest or gall-bladder that is under consideration.

One of the co-authors herein (Cole) strives to obtain this detail by using a small focal point tube of a penetration just sufficient to cast an image on the screen beneath the patient, and makes the exposure long enough to obtain the desired density of the Roentgen plates, whilst his colleague, (George), considers speed an important factor, and uses a fairly large focal point with varying penetration, making the exposure so short that it practically eliminates the effect of the involuntary motions of the body, particularly gastric and intestinal peristalsis and pulsations of the blood vessels.

The necessity of using an extremely small cone, showing only a limited area in each Roentgen plate is strongly emphasized. The length of the cone is not an essential factor. By means of such a cone secondary rays are generated in the patient to a much less degree, and the fogging effect being proportionately diminished it is then possible to show distinctly a calculus that would be quite invisible if a large or moderate sized blend were used. The cone may be pointed obliquely downward, so that the axis of the rays is parallel with the under surface of the liver. When this is done, the under surface of the liver appears as a clear cut and well defined line; and the gall-bladder, if normal, can usually be detected, or the relation of the patient to the tube may be altered by a slight rolling from side to side. Sometimes, particularly when the gall-bladder is high, a lateral position will show the gall-stones against the background of the liver.

It matters very little whether screened or unscreened plates are used. Some plates may be made with screens, and some without them. The unscreened plates should be exposed face to face, and slightly undertimed, with a view to matching up the shadows thereon after development. Double screened plates also may be made in a special holder, constructed to carry screens of different rapidity. Two plates and two screens of different speed are used in the same holder. The plates are placed back to back. The under one face down, lies against a fast screen, whilst the upper one lies face upward against a relatively slow and thin screen. A very short or even undertimed exposure is made, and after development the plates are superimposed and matched together, whereupon by transmitted light one gets the plastic effect up to a certain point. This method eliminates screen and plate defects to a great extent.

Roentgen stereoscopy adds very materially in the interpretation of the Roentgen plates. Four exposures may be made, preferably with each exposure on the two plates face to face, giving a slight lateral shift to the tube between the first and second exposures. Then move the tube down about two inches and make two more exposures, shifting the tube once more in the lateral direction between the third and fourth. In this manner, one can stereoscope the various exposures with each other, that is to say, 1-2 and 3-4 stereoscoped with each other laterally; and 1-3 and 2-4 stereoscoped with each other vertically.

Comparison from behind avails little; but small areas may be brought close to the plate for detailed examination, by the use of a circular plate-holder about the size of the end of a small compression blend. This holder, with or without a screen, may be pushed up under the edge of the rib, thereby materially diminishing the thickness of that part of the abdomen.

The entire region from the eleventh rib to the crest of the ileum or even lower, should be included in the examination. As repeated exposures are required, and as some of the plates are not screened, the total exposure is considerable, and a filter should always be used to prevent dermatitis. If after careful study of at least fifteen or twenty Roentgen plates of the gall-bladder, no evidence of the calculi is found, the patient should be submitted to an examination of the stomach, duodenum, and colon, in a search for adhesions from cholecystitis without stones, or for the purpose of differentiating this condition from post-pyloric ulcer and appendicitis with reflex gastric symptoms.

Even when there is direct evidence of the stone, this additional information is of great value in determining whether or not there is a concomitant lesion, whether or not surgery is indicated and how difficult the operation may be.

Although the technic herein described greatly facilitates the interpretation of the Roentgen plates, gall-stones may be detected in the ordinary Roentgen plate, in a large percentage of cases if one is familiar with their Roentgenographic appearance.

Of late, a re-examination has been made of those Roentgen plates taken during the last four or five years in which direct evidence of gall-stones was insufficient or undetected, but which showed enough evidence of adhesions from the accompanying cholecystitis to justify surgical procedure. In the re-examination, our increased knowledge of the Roentgenologic appearance of soft gall-stones has enabled us to detect direct evidence of the calculus on the Roentgen plate, in a large number of cases where calculus was found at operation.

The same results have been obtained from a re-study of those cases where the gall-bladder only was examined, and a negative diagnosis was made. The gall-stones found at operation in these patients can now be identified in the original Roentgen plates. The evidence was there before, but we were then unable to recognize it.

Of all the aids to be suggested for detecting calculi, the method of matching together the shadows by superimposing one Roentgen plate over another, as described in a previous communication,[6] is probably the most important. By far the best illumination can be obtained by holding the plate obliquely at an arm's length

against the northern sky. A concave lens or better still a pair of opera glasses used in the reverse direction, will accentuate contrasts. For examining a small area, a magnifying glass may be helpful, especially in identifying the facetted side of small calculi.

A lantern slide made of superimposed Roentgen plates, will sometimes accentuate the contrast and bring out details not observed in the original plates. Thus very faint shadows may sometimes be shown well enough for lantern slide demonstration or reproduction; whereas others cannot be demonstrated or reproduced for publication, because the shadows concentrated on the slides are diffused by enlargement.

Identification of the gall-bladder aids materially in the detection of calculi, and is a detail which one should always try to obtain. It can be detected in nearly every case where it exists, normal in size or dilated. The gall-bladder may be found anywhere from the region of the eleventh rib to the fifth lumbar vertebra. In one case, it was located as far down as the sacrum. As a rule, it will be seen below the lower border of the liver. If, after taking a number of Roentgen plates, the gall-bladder is not found in the normal position, it can sometimes be located when a subsequent bismuth examination is made, by noting the position of the transverse colon.

Roentgenographically, gall-stones are divided into two definite groups: (1) Stones which contain considerable calcium, and (2) Cholesterine stones which contain no calcium, or only a trace of it. Gall-stones containing a large proportion of calcium can be shown without much difficulty and are sometimes so dense as to be mistaken for renal calculi.

The dense calcareous gall-stones are a type of calculi infrequently found; this perhaps explains why the study of gall-stones has made little advance since they were first observed. By far the greater number of gall-stones consist of cholesterine nucleus, with a calcareous coating, or *vice versa*. When the peripheral concretions are thin, which is true in about 50% of the cases, the stones are difficult to detect. With increasing density of the coating, the ring-like appearance is proportionally more marked and relatively easier to discover; but it is probably safe to say that the absolutely pure cholesterine stone is a rare entity[7].

Unless unusual care is used in making and interpreting Roentgen plates, cholesterine stones containing only a trace of calcium will be entirely overlooked in the future, just as they have escaped observation in the past. It is not the shadow producing quality of the stone as a whole that concerns us in this class of case, but rather the shadow cast by the long diameter of the periphery of the stone. Whether the stone be facetted, spherical or a combination of both, in some particular diameter there will be sufficient density to cast a peripheral shadow. This explains in part why a single Roentgen plate of a series will often reveal a perfectly characteristic gall-stone, whereas all previous plates of the same region show only questionable shadows. If each individual stone in a mass of small stones does not cast a well-defined shadow, the shadow of the entire mass will often give the clue.

The interpretation of suggestive shadows in the region of the gall-bladder is fraught with difficulties, similar to those experienced when positive diagnosis of kidney stones was first attempted. The present accuracy in diagnosing renal stones is the result of experience gained through numerous errors. Some of the disturbing factors in the gall-bladder region, such as intestinal contents, calcified mesenteric glands, costo-chondral ossification, and stones in the kidney and liver, have been enumerated in previous articles.[8] Recent experience has added to our knowledge of possible pitfalls. Food in the cap is a particularly confusing finding, because its density corresponds to the faint shadow of a stone, and its size and position add to the illusion. Upon minute examination, however, it will be found that the shadow of food in the cap lacks the ring-like circumference of the cholesterine stone with a calcareous shell; neither has it the homogeneous character of the calcium stone, but is rather mottled in appearance. Moreover, it is usually possible to completely identify the shadow by tracing the outlines of the adjoining pars pylorica. Where the shadows are obscure several Roentgen plates matched together, will increase the density. A disturbing element of the same character is food contained in a single haustrum of the colon at the hepatic flexure. Being broad at one end and tapering to a fine point at the other end, it resembles an almond-shaped calculus. Abstinence from food eliminates results from this error.

Another interesting finding, and one which is visible only to the eye trained to pick up the slightest variation in density, is the presence of little rings, often no larger than a good sized pinhead, sometimes found in groups, sometimes isolated, in varying shapes of round, oval, or even quite irregular form. It is quite possible that these infinitesimal findings are the walls of bloodvessels seen in cross section.

It is a mistake to study Roentgen plates when they are wet, not only because reflected light cannot be avoided, but also because there is risk of damaging the plate.

A careful study of the clinical history of cases in which gall-stones are definitely shown by Roentgen methods, reveals the futility of expecting the classical gall-bladder symptoms to agree with the Roentgen diagnosis.

Before the advent of the x-ray, renal colic and renal calculi were considered almost synonomous terms. But surgical procedure for renal colic in cases where no calculus was shown on the Roentgen plate, eventually proved that only about one fourth of the cases having typical attacks of renal colic had a calculus of suffi-

cient size to be found by surgical exploration. On the other hand, only about one fourth of the cases in which kidney stones were definitely demonstrated by Roentgen methods, had anything simulating renal colic.

Our present experience indicates that the same observation will hold true in the gall-bladder region; that only when a gall-stone passes or engages does it cause the typical gall-stone colic, and this is relatively rare compared with the frequency of gall-stones.

The clinical indications of cholecystitis compare with those of pyelitis, except that one does not detect the presence of pus in the stools as readily as he detects it in the urine. Some of the cases of gall-stones give practically no characteristic symptoms of gall-stones, but are associated with obscure gastric or neurotic symptoms.

Therefore, any case presenting gastro-intestinal symptoms with absence of Roentgen evidence of an organic lesion of the stomach or intestines, should be submitted to a careful Roentgen examination of the gall-bladder. This is particularly true if, as Deaver suggests, the patient is "fair, fat and forty, and belches gas."

It is much easier to detect the stone in this class of case, than in thin, wiry, poorly nourished people who have no fat to outline the gall-bladder, and whose muscle is nearly as dense as bone. In persons under twenty-five, the peripheral coating of the stone is not usually dense, and the stone is so soft that it does not show even a dim peripheral ring or edge. Post operative cases with extensive adhesions, carcinoma of the liver or gall-bladder, and ascites also render negative diagnosis exceedingly difficult if not impossible.

Diagnostic accuracy is directly in proportion to the care exercised in making the examination, and one's experience in detecting and interpreting the findings. Statistics are of little value until thousands of cases have been observed by methods as careful and detailed as those described above. By that time the value of the method will be generally acknowledged, and statistics will not count for any more than they do now in cases of renal calculi or fractures.

The Roentgen method of diagnosing gall-stones has become so accurate that if there is no direct Roentgen evidence of gall-stones, or indirect evidence of adhesions involving the stomach, cap, duodenum, or colon, as a result of cholecystitis, the surgeon should have a preponderance of clinical evidence as a warrant in operating for gall-stones.

RESUMÉ.

1. Until within three or four years, gall stones were rarely detected by Roentgen rays.

2. During the last few years several Roentgenologists, including ourselves, consider that they have detected gall-stones in about 50% of the cases examined. This was estimated in different ways by different men.

3. Experience has shown that gall-stones may be detected about twice as frequently as formerly by: (a) A special technic for making the Roentgen plates; (b) A minutely careful study of the Roentgen plates by various methods; (c) A thorough intimacy with the Roentgenographic appearance of gall-stones.

4. By applying the new method of interpretation, gall-stones have been detected on many Roentgen plates made by the old technic, and formerly diagnosed as negative.

5. By means of the special technic for making and interpreting Roentgen plates, a positive diagnosis may be made in so many cases, that the negative diagnosis has become of considerable significance.

6. Much care and study will be necessary to properly interpret the additional detail which can be obtained by the special technic, and undoubtedly some erroneous diagnoses will be made. (Cole has made two such erroneous diagnoses in the last month, and has thereby learned to differentiate the food in the cap and the feces in the haustra of the colon from evidence of calculi.)

7. If there is no direct Roentgen evidence of gall-stones, the stomach, cap, duodenum and colon should be examined for adhesions from an accompanying cholecystitis.

8. If there is no direct or indirect Roentgen evidence of gall-stones, the clinical history should be more characteristic than usual before one resorts to surgical procedure.

REFERENCES.

[1] Beck: Numerous articles and a chapter on Gall-Bladder in Groedel's Atlas der Röntgendiagnostic in der inneren Medizin, München, 1909.

Pfahler: Die Röntgenstrahlen als Hilfsmittel bei der Gallensteindiagnose, Fort. a. d. Geb. d. Rönt., by. xvi, H. 5, S. 335-337, April, 1911.

Gastric and Duodenal Adhesions in the Gall-Bladder Region and Their Diagnosis by the Roentgen-Ray, J. A. M. A., Vol. lvi, No. 24, June 17, 1911, pp. 1777-1779.

The Roengen-Rays in the Diagnosis of Gall-Stones and Cholecystitis, J. A. M. A., Vol. lxii, No. 17, Apr. 25, 1914, pp. 1304-1306.

Lenne: Experimentale Untersuchungen bezeuglich der Darstellung von Gallensteinen durch Röntgenstrahlen, Erfurt, 1912. G. Richters.

Holland: On Gall-Stones, Arch. of the Roent. Ray, Mch., 1913, p. 374.

[2] Lewis Gregory Cole: The Roentgenographic Diagnosis of Gall-Stones and Cholecystitis read before the Atlantic County Med. Soc., May 9, 1913. Published in Surgery, Gynecocolgy and Obstetrics, Feb., 1914, pp. 218-227.

James T. Case: Roentgenography of the Liver and Billiary passages, with Special Reference to Gall-Stones. Read in the Section on Surgery of the American Med. Asso., Minneapolis, June, 1913. Published in Journal of the American Med. Asso., Sept. 20, 1913.

George E. Pfahler: The Roentgen-Rays in Diagnosis of Gall-Stones and Cholecystitis. An Improvement in Technic. Read before the Philadelphia County Medical Soc., Mar. 11, 1914. Published in the Journal of the American Med. Asso., Apr. 25, 1914, Vol. lxii, No. 17.

Arial W. George and I. Gerber: Demonstration of Gall-Stones by the Roentgen-Ray. Published in the BOSTON MED. AND SURG. JOUR., Apr. 30, 1914, Vol. clxx, No. 18, p. 680.

[3] Annals of Surgery. Current Number.

[4] Cole: Roentgenographic Diagnosis of Gall-Stones and Cholecystitis, Surg., Gynec., and Obstet., Feb., 1914, pp. 218-227.

[5] Cole: The Roentgenographic Diagnosis of Gall-Stones and Cholecystitis, Surg., Gynec., and Obstet., Feb., 1914 pp. 218-227.

[6] The Roentgenographic Diagnosis of Gall-stones and Cholecystitis, Surgery, Gynecology and Obstetrics, Feb., 1914, pp. 218-287.

[7] Aschoff and Backmeister: Die Cholelithiasis, Jena, 1909.

[8] Cole: The Roentgenographic Diagnosis of Gall-Stones and Cholecystitis, Surgery, Gynecology and Obstetrics, Feb., 1914.

A STUDY OF THE EFFICIENCY OF MIXED TOXINS (COLEY) IN INOPERABLE SARCOMA. A CRITICAL ANALYSIS OF 134 MICROSCOPICALLY PROVEN CASES.

By Torr Wagner Harmer, M.D., Boston,

Assistant in Anatomy, Harvard Medical School; Junior Assistant Surgeon, Children's Hospital; Assistant in Surgery, Massachusetts General Hospital.

In the Boston Medical and Surgical Journal of August 13, 1914 (Vol. clxxi, pp. 253-261), I published a paper based upon observations made during the past five years upon 91 cases treated with mixed toxins of erysipelas and bacillus prodigiosus.* Some of these cases were under treatment too short a period to be of value in determining the efficiency of the toxins. Some were early cases in the series in which the doses were too small. Some cannot be traced by letters, visits to former homes, state or city records. Some were cases in which no pathological report was obtained. Some were cases of microscopically proven carcinoma. Some were cases of proven sarcoma in which toxins were administered as a prophylactic against recurrence after operations which might of themselves have cured (amputations without demonstrable metastases, etc.). Obviously in a critical analysis to determine the efficiency of toxins in the treatment of sarcoma such cases were excluded. There remained 32 cases. These were analysed; first, according to the type of sarcoma, and second, according to the anatomical situation and tissue of origin. These 32 cases were all primary or recurrent inoperable sarcoma, or cases in which the disease could not be eradicated by operation. All were proven by microscopic examination. All were under treatment at least three weeks. In all cases the results were free from vitiation by concurrent treatment (x-ray, radium, arsenical preparations, etc.). All living cases had been seen or heard from within three months.

The purpose of this study was to determine, if possible, the type or types of cases in which this treatment offered expectation of benefit. Obviously the answer to this question obtained by an analysis of so small a series of cases could be only suggestive. Despite many failures the most rigorous criticism of certain hopeless inoperable cases in which growths have permanently disappeared and no metastases have occurred must admit apparent cure attributable either to the toxins or to spontaneity. Factors are concerned of which we have no knowledge, and spontaneous cures have doubtless occurred. The percentage of apparent cures occurring with the use of toxins seems, however, too large to attribute to spontaneity. On account of a comparatively small percentage of most encouraging results an effort has been made in this paper to assemble a larger series of cases of sarcoma treated with the toxins in order to make more trustworthy deductions regarding their efficiency. To this end there have been added to my previously reported cases a few personally treated since the former publication and certain cases reported by Dr. Coley which have conformed to the criteria adopted in my earlier paper. Dr. Coley kindly sent me a copy of his address before the Third International Conference of Cancer Research held at Brussels in August, 1913. His monograph may be divided into five parts, viz.: the use of mixed toxins in inoperable sarcoma (81 cases), their use as a prophylactic after operations (9 cases), their use in inoperable carcinoma (8 cases), their use in the hands of other men (12 cases), and a tabulation of 125 cases also treated by other men. Our present inquiry is not concerned with use of the toxins in carcinoma nor as a prophylactic after operation. All of the other cases, 218 in number, have been abstracted and tabulated, as far as possible, after the manner of my own cases. Dr. Coley's recent paper on Sarcoma of the Long Bones in the *Annals of Surgery*, (1914, vol. lx, Nov., pp. 537-566) contains four cases not included in his Brussels address. These have been added, making a total of 222 cases. The data recorded has been, name or number of patient, age, sex, occupation, clinical diagnosis, duration of disease before operation or toxin treatment, history of trauma or irritation, nature of operation, interval between operation and toxins, size of growth before operation, size of growth when toxins started, site of injections, pathological diagnosis, tissue of origin, duration of treatment, maximum dose, character of reactions, effect of toxins on size and consistency of the growth and on pain, remarks of interest, and end result.

Only those cases in which data are given, which conform with the criteria adopted for an analysis of my own cases, have been selected for this series. In other words, all cases must have been proven by microscopical examination; all must have been primary or recurrent inoperable sarcoma, or cases in which the disease could not be eradicated by operation; all must have been under treatment at least three weeks; all must have been free from concurrent treatment (x-ray, radium, arsenical preparations, etc.). Of the 222 cases which have been abstracted 100 have been chosen as suitable for this analysis. Perhaps I have been very critical and have excluded cases which by others might have been judged worthy of consideration. The question is vital. The toxins have merit but the treatment is distressing. I believe, therefore, that conclusions furnished only by most rigorous criticism should be accepted.

Following the plan pursued in my previous paper I have arranged the cases in six groups determined by the effect of the toxins.

Group A includes those cases in which there was no appreciable effect. There were 12 cases.

* I wish to express my appreciation to members of the staff of the Massachusetts General Hospital through whose courtesy this study was made possible.

Group B. includes those cases in which the growths softened but did not appreciably diminish in size. This softening may be fairly attributed to the toxins rather than to increased vascularity and cellularity associated with rapid growth; for it occurred at the site of the injections. There were 5 cases.

Group C includes those cases in which growths disappeared or practically disappeared, but returned. There were 20 cases.

Group D includes those cases in which growths disappeared but metastases simultaneously occurred. There were 10 cases.

Group E includes those cases in which growths diminished in size but still persisted. In this group have been included those cases in which inoperable masses have been so reduced that operations have subsequently been performed. A very few cases of this description have shown upon pathological examination no remaining trace of sarcoma. Such cases, in which the pathological reports have been made by pathologists of repute, have been included in Group F, apparent cures.

Growths treated with mixed toxins may disappear either by undergoing marked necrosis (becoming soft and fluctuant), by what appears to be simple absorption (probably the same process as the first but absorbing as fast as broken down so that no fluctuant tumor occurs), or by acute inflammation followed by resolution with a resulting fibrous mass. The latter process has been demonstrated microscopically in a series of photomicrographs in my previous paper.* A period of inflammation is followed by one of young connective tissue and blood vessels resulting eventually in fibrous tissue. The tumor in such cases is destroyed by an inflammatory process. With this microscopical evidence it seems fair to consider such cases apparent cures. All other cases with residual masses that have not been examined microscopically have been included in Group E. There were 14 cases.

Group F includes those cases which are apparent cures in which growths have disappeared and no metastases have occurred. There were 73 such cases.

Again following the plan pursued in my previous paper these 134 cases have been analyzed; first, according to type of sarcoma, and second, according to the tissue of origin or anatomical situation.

TABLE I.

ANALYSIS OF CASES ACCORDING TO TYPE OF SARCOMA.

Group	A	B	C	D	E	F	Totals	
Spindle cell.....	2	1	5	1	1	22	32	41
Fibro-sarcoma ..	2				3	4	9	
Round cell.....			4	1	4	14	23	
Small	1	1	8	2	2	13	27	56
Large	3		1	1		1	6	
Melanotic				5		1		6
Giant cell.....	1	1				1	11	14
Mixed cell.....	3	2	2			1	5	13
Leiomyoma						1	1	2
Angiosarcoma						1		1
Hypernephroma ..							1	1
Totals.....	12	5	20	10	14	73		134

In Table I* is shown an analysis according to the type of sarcoma.

Spindle Cell Sarcoma. It so happened in my previously recorded cases that the pathologists' reports indicated the type of spindle cell, small or large. This distinction was, therefore, made in the previous analysis. It was interesting to note that of the three cases of each type there were no apparent cures of the small cell type, whereas there was one of the large cell type. This distinction of the size of cell may not be important. It is seldom made in Coley's case reports. In this present analysis, therefore, both have been assembled under the head spindle cell. The term fibrosarcoma, however, has been retained. Of the former there appears 22 apparent cures, of the latter four; a total of 26 cases, that is, about 36% of the total number of apparent cures.

Round Cell Sarcoma. In my previously reported cases a differentiation between small and large round cell cases was made. This has been followed, as far as possible, in this series. In a considerable number this distinction is not made, so the general term round cell has been used. The apparent cures include 14 cases of round cell, 13 cases of small round cell, and one case of large round cell; a total of 28 cases or about 39% of the total number of apparent cures. I am interested to note only one apparent cure of large round cell type. In my previous paper I made the observation that of about an equal number of cases of each type there were no apparent cures of the large cell type, whereas there were two of the small cell type. This larger series apparently substantiates this observation. The treatment of inoperable round cell sarcomata with mixed toxins, therefore, offers reasonable expectation of benefit, especially the treatment of the small round cell type.

Melanotic Sarcoma. In the previous series of cases it was observed in cases with multiple melanotic growths that individual tumors might be destroyed but coincident with this local benefit untreated tumors were increasing in size and new metastases were forming. All cases fell in Group D. One case, however, in which the treatment of a single large melanotic growth was undertaken lived for two years and two months. This case was given the largest single dose I have seen recorded, 52 minims. He displayed great tolerance for the toxins. The prognosis appeared favorable, as previously reported, until a spree of nineteen days was indulged in. After

* I am indebted to Mr. E. S. Brown of the pathological laboratory at the Massachusetts General Hospital for his care and skill in the production of these pictures.

* In the tables both my successes and my failures have been recorded. The full title of Coley's Brussels address, however, shows that he wished principally to set forth cases successfully treated. Some failures, however, were included. These tables, therefore, cannot be accepted as showing the proportion of failures and successes.

this his tolerance was greatly diminished so that only a dose of 4 or 5 minims could be given and metastases in various tissues appeared in quick succession.* I was led to state that the toxins offered no expectation of benefit in cases of multiple melanotic growths but that they might be legitimately tried in cases with single melanotic growths. It is interesting to note in this larger series that five of the six cases fall also in Group D and that the other case, that of Dr. Greenwood of Leeds, England, was a single large growth. This case is an apparent cure, the only cure of a melanotic case that has come to my notice. These facts seem curiously to substantiate the conclusions previously made from observations of a smaller series of cases.

Giant Cell Sarcoma. There is much disagreement at present regarding the nature of these growths. Certain pathologists and surgeons maintain that they are true malignant tumors, *i.e.* capable of forming metastases (Coley, Eve, Maybury). Others admit that such growths are prone to recurrence but deny them malignancy in the sense of forming metastases. The name giant cell tumor (Bloodgood), instead of giant cell sarcoma, has, therefore, been suggested. Again Barrie, of New York, believes that the process is only inflammatory, an osteomyelitis. Without discussing these opinions it is true that many cases of this condition can be cured by one or more curettings or resection. Other cases on account of size or situation may require amputation. Still others, probably the smallest group, cannot be cured by surgery alone. I refer in particular to more or less extensive involvement of the vertebrae. In considering growths originating in the medullary cavity of bone it is to be remembered that some may arise from endosteum and others from marrow elements. It is to be remembered that osteoclasts are present and these, I believe, may be regarded as foreign body giant cells of endothelial origin. The presence of some giant cells in medullary tumors is, therefore, to be expected. It is to be remembered that some of these tumors remain limited to bone. They may be expansile but for a long period remain localized. Spontaneous fractures may occur and heal. This class may be regarded as one type of bone cyst and considered myxomata. We are all familiar with another type which more quickly ruptures the bone, invades the soft parts, grows with great rapidity, often to considerable size, and not infrequently causes death. In selecting cases for this series I have had this type of case in mind. The term giant cell sarcoma has, therefore, been retained. Finally these medullary growths do not, in the majority of cases at least, conform with the condition commonly called osteomyelitis.

In my previous series were reported four cases which it seemed fair to regard as giant cell sarcomata. Two of these were apparent cures. There have been added in this series ten cases including nine apparent cures, making a total of eleven apparent cures. The character of these cases, as shown in the case epitomies at the end of the paper, will, I believe, justify the use of mixed toxins in selected cases. Certain cases are appropriately treated by one or more curettings, others by resection, and still others on account of their size or situation by amputation. The records seemed to justify a preliminary trial of toxins in carefully chosen cases in which slowly growing tumors have ruptured more or less extensively into the soft parts rather than the immediate sacrifice of the limb. If such treatment is practised, the patient should understand that amputation may ultimately be necessary, and it should not be long deferred in the advent of increased rapidity of growth, repeated hemorrhages, considerable absorption, or superimposed infection. By this method with skilful judgment a few limbs apparently have been saved.

A small group on account af anatomical situation (more or less extensive involvement of the vertebrae) defy surgical eradication. These, I believe, should be submitted primarily to surgical attack, followed immediately by toxin treatment. The records justify the use of the toxins in such cases.

Mixed Cell Sarcoma. Under this head have been assembled cases with pathological returns of osteosarcoma, spindle cell osteosarcoma, chondrosarcoma, osteochondrosarcoma, etc. It has never been my good fortune to benefit with the toxins any cases of this class. This series, however, shows five apparent cures, viz: mixed cell tumor of the parotid, round and spindle cell sarcoma of the uterus, chondrosarcoma of the ilium, round cell osteosarcoma of the humerus and scapula, and spindle cell osteosarcoma of the superior maxilla.

There remain in Table 1 three cases, a leiomyoma, an angiosarcoma, and a hypernephroma, epitomies of which appear at the end of the paper. The first case (No. 56) was a leiomyoma of the uterus for which hysterectomy was performed. Within a few months the entire pelvis was filled with an inoperable recurrence of hard consistency and irregular outline, apparently involving the bladder. Mixed toxin treatment was instituted. The mass became smaller, softer, more movable, and pain ceased. Treatment was continued with periods of rest for about three years. Three years, eleven months later the patient was in excellent health and local examination showed only slightly more scar tissue than would be expected after an hysterectomy. This was apparently a case of malignant leiomyoma. I have at present under treatment a somewhat similar case referred by Dr. W. J. Mixter. A hysterectomy had been performed for fibroids. Tumors subsequently appeared on the back and paralysis of the legs ensued. Dr. Mixter removed as far as possible a growth involving the vertebrae, complete eradication was impossible. The patient is now able to walk with assistance.

* A detailed account of this case with photographs and photomicrographs is given in the BOSTON MED. AND SURG. JOUR., 1914, Vol. clxxi, No. 7, August 13, 1914.

Toxin treatment was instituted immediately after operation and has been continued for two months. Pathological reports: 1. Tumor over sacrum, probably leiomyoma; 2, Tumor on right shoulder, leiomyoma; 3, Specimen removed at operation on spine, spindle cell sarcoma. It is too early to predict the outcome but the course has been so far favorable.

The second case (No. 33) was a thrice recurrent angiosarcoma of the breast. Toxin treatment was instituted when the mass extended laterally from the sternum to the anterior axillary line and from the clavicle above nearly to the costal border below. It was fixed to the chest wall and composed of markedly protuberant nodules and considerably ulcerated. Mixed toxin treatment for eight months caused softening and progressive decrease in size. The mass was then operable and was excised. No pathological report is given but the patient was seen eight years later without evidence of recurrence. This case has been recorded in Group E.

The last case (that of Mr. Cornell of Sheffield, England) was a woman of 37 upon whom a transperitoneal nephrectomy was performed for hypernephroma. In four months toxin treatment was started for a huge recurrence and continued for four and a half months with entire disappearance of the tumor. A year later she was seen in excellent health without evidence of recurrence.

TABLE II.

ANALYSIS OF CASES ACCORDING TO ANATOMICAL SITUATION AND TISSUE OF ORIGIN.

Group	A	B	C	D	E	F	Totals
Nose and sinuses...			2			6	8
Tonsil		1	4			2	7
Parotid			1		1	3	5
Pharynx	1		1				2
Cervical glands....		(1)	4(6)	1	(2)	7(4)	12
Chest wall.....		(1)	(1)		1	1	2
Breast			1		1	1	3
Abdominal wall....						7(2)	7
Axilla				1	(1)	1(3)	2
Groin				(1)	1	2	3
Intra-abdominal ..	(7)		1		1	4(2)	6
Pelvis	1		(1)			1(2)	2
Uterus					2	3	5
Ovary			2		1	1	4
Kidney					1	2	3
Bone (not giant cell)	5	2	2	2	3(1)	13	27
Giant cell	1	1			1	10(1)	13
Fascia and muscle.	3	1	2(1)		1	5(2)	12
Skin and subcu.....				5		3	8
Nerve sheath						1	1
Orbit				1			1
Sperm. cord	1						1
Totals	12	5	20	10	14	73	134

ANALYSIS ACCORDING TO ANATOMICAL SITUATION AND TISSUE OF ORIGIN.

In Table 2 is shown an analysis of cases according to anatomical situation or tissue of origin. It was rather striking in my previous analysis to note that five of six intranasal and nasal accessory sinus cases were apparent cures. The others fell in Group C, the growth practically disappearing but recurring. Two cases have been added in this series and it is interesting that one is an apparent cure, and the other falls in Group C. These six apparent cures include fibrosarcoma of the septum and ethmoid, giant cell sarcoma of the antrum and superior maxilla, large spindle cell sarcoma of the ethmoid, small round cell sarcoma of the antrum and ethmoid, small round cell sarcoma of the antrum, ethmoid, superior maxilla, posterior septum and nasopharynx, and spindle cell sarcoma of the ethmoid, superior maxilla and frontal sinuses. The case epitomies show the extent of these growths. I must conclude, as previously, that the toxins are apparently of value in sarcomata arising in the nose and accessory sinuses, whether round cell, giant cell, or spindle cell.

Of the Cervical Gland cases it will be noted that there are seven apparent cures of primary growths and four of metastatic extensions from disease of neighboring structures. The latter are indicated in parentheses. This plan has been followed throughout the paper. Only primary growths are considered in this analysis but, believing that the effect of toxins on direct extensions or metastatic growths might be of interest, I have represented such secondary processes in parentheses. The apparent cures of primary sarcoma of the cervical glands are cases 18-24 inclusive, all reported as round or small round cell type, and composing about 10% of the total number of apparent cures. Add to this number four apparent cures of metastatic involvement. It seems fair to regard the toxins worthy of trial in inoperable cases of this type.

The Abdominal Wall cases are seven in number, 5 of spindle cell type, 2 of round cell type, and all apparent cures. Two extensions to the abdominal wall from sarcoma of the ilium were also apparent cures.

The intra-abdominal cases show four apparent cures including three spindle cell and one round cell. These were all inoperable growths involving in one case the ascending colon, small intestine, omentum, and liver border, and in another case the cecum, omentum, and mesentery In the previous series were recorded seven cases of intra-abdominal sarcoma, all failures. These however, were extensions from thigh, true pelvis, or spermatic cord, or metastases from distant tumors. The apparent cures noted in this table were all primary growths. The two apparent cures recorded in parentheses were spindle cell sarcomata of the abdominal wall involving the bladder.

Of the Bone cases (not giant cell) thirteen apparent cures are recorded; five spindle cell, five round cell, and three mixed cell. The bones involved included two cases of the maxilla, two of the vertebrae, two of the ilium, and one each of the radius, humerus, sternum, metatarsal, tibia, femur, and lower jaw. The results of surgical treatment of periosteal sarcoma of the

femur and upper humerus (including hip joint and interscapulo-thoracic amputations) are notoriously poor. An apparent cure of each is here recorded. It need not be stated that sarcoma of the vertebrae often defy surgical cure. Partial operations are necessarily followed by recurrence and subsequently by death. The case epitomies at the end of the paper are, I believe, sufficiently convincing to justify the use of toxins in these inoperable bone cases. The number of apparent cures, furthermore, comprises over 18% of the total number of apparent cures here assembled.

Of the Giant Cell Bone cases the series shows ten apparent cures including three cases with involvement of the vertebrae, two of the superior maxilla, and one each of the sacrum, ilium, inferior maxilla, radius, and femur.

Under heading Fascia and Muscle have been assembled all cases originating from these tissues except those specially listed under headings Chest Wall and Abdominal Wall. There appear five apparent cures of primary growths and two of secondary growths from the spine and metatarsal. Five of the seven are of spindle cell type, including two of the buttock, and one each of the thigh, knee, and calf. The remaining two are growths of the back, both round cell. Cases of sarcomata of the upper extremities appear among the failures in this series but not among the apparent cures.

Skin and Subcutaneous Tissue cases include sarcomata arising from cutaneous and subcutaneous benign growths (pigmented naevi, etc.). The apparent cures include a melanotic sarcoma of the neck, a spindle cell degeneration of a preexisting benign tumor of the shoulder, and a round cell sarcoma of the lip.

In reviewing both tables the type of growth most benefited is seen to be the round cell, 39% of the total number of apparent cures. Of this type the small round cell responds very much more favorably than the large round cell type. The percentage of apparent cures furnished by other varieties is spindle cell 36, giant cell about 15, and mixed cell about 7. It is seen that primary growths of bone (not giant cell) furnish the greatest number of apparent cures, over 18%, the giant cell cases furnish about 15%, cervical gland cases about 10%, and nose and accessory sinus cases about 8%. It has been stated that the spindle and round cell cases were evenly divided in bone and intranasal and sinus cases. The cervical gland cases are all round cell.

Very striking relief of pain is occasionally observed with the use of toxins. Coley makes particular mention of this in cases 85, 104, 55, and 56, namely, periosteal spindle cell sarcoma of the humerus, giant cell sarcoma of the sternum, round cell sarcoma of the pelvis, and malignant leiomyoma of the pelvis. The most remarkable cases in this respect which I have observed are a spindle cell sarcoma of the pelvis, and a tumor of the upper jaw encroaching on the mouth, nose and orbit, both kindly referred by Dr. S. J. Mixter. The first case (No. 54) prior to the institution of toxins suffered such agony that doses of ½ to ¾ of a grain of morphine were necessary every two or three hours. During the twenty-four hours he would also receive phenacetin, aspirin, codeia, and cannabis indica. Shortly after the treatment was started only occasional small doses of morphia were necessary, some days none at all. The other case although evidently a very vascular sarcoma of the superior maxilla cannot be included in this series because no pathological report was obtained. This man, who had been accustomed to considerable doses of morphia, entirely omitted the drug after the toxins were started.

CONCLUSIONS.

1. From this critical survey it seems fair to conclude that mixed toxins of streptococcus and bacillus prodigiosus (Coley) are of value in certain cases of inoperable sarcoma.

2. The treatment of primary or recurrent inoperable sarcoma with mixed toxins must be intensive. The increment of the dose and the interval between injections requires some experience. This method of treatment is distressing and is never certain. This analysis has been undertaken, therefore, in the hope of ascertaining the types of case which offer reasonable expectation of benefit.

3. The institution of this treatment is unjustifiable in cases in which operative measures of reasonable safety offer possible hope for removal. A frank statement of the nature and the severity of reactions, and the probability of benefit should be made to the patient or some responsible person before the treatment is undertaken.

4. Seventy-three cases after most rigorous criticism have been regarded as apparent cures.

5. The small round cell type apparently offers the greatest expectation of benefit followed closely by the spindle cell type (excluding fibrosarcoma). Only a relatively small number of mixed cell type have been benefited. The use of toxins in cases with multiple melanotic growths does not seem justifiable but their use in single melanotic growths is legitimate.

6. Regarding the tissue of origin the greatest number of apparent cures have occurred in bone sarcomata (exclusive of giant cell cases) over 18% of the total number of apparent cures, with an equal division of round cell and small cell types.

7. Giant cell cases (as defined in the text) furnish about 15% of the total number of apparent cures. The records seem to justify preliminary trials of toxins in carefully chosen cases in which slowly growing tumors have ruptured more or less extensively into the soft parts rather than immediate amputation. With skilful judgment a few limbs have apparently been saved. If such treatment is practiced, the

patient should understand that amputation may ultimately be necessary, and it should not be long deferred in the advent of increased rapidity of growth, repeated hemorrhages, considerable absorption, or superimposed infection.

A small group on account of anatomical situation, viz., extensive involvement of the vertebrae, defy surgical eradication. These, I believe, should be submitted primarily to surgical attack followed immediately by toxin treatment. The records justify this practice.

8. Primary inoperable round cell sarcomata of the cervical glands compose about 10% of apparent cures.

9. Sarcomata arising from fascia and muscle, which have been apparently cured, have been situated in the lower extremity, abdominal wall, and back. They compose about 16% of the total number of apparent cures. Nine of twelve are of spindle cell type.

10. In a small number of cases the toxins produce striking relief of pain.

REFERENCES.

Coley: Annals of Surgery, 1891, xiv, 199-220.
Coley: Amer. Jour. Med. Sciences, 1893, N. S., cv, 487-511.
Coley: Amer. Jour. Med. Sciences, 1894, cviii, 50-66.
Coley: Amer. Jour. Med. Sciences, 1896, cxii, 251-281.
Coley: Johns Hopkins Hosp. Bull., 1896, vii, 157-162.
Coley: Jour. A. M. A., 1898, ii, 389-395; 456-465.
Coley: Annals of Surgery, 1907, xlv, 321-359.
Coley: BOSTON MED. AND SURG. JOUR., 1908, clviii, 175-182.
Coley: Surg., Gynec. and Obstet., 1911, xiii, 174-190.
Coley: Annals of Surgery, 1913, lviii, 97-108.
Coley: The Treatment of Malignant Inoperable Tumors, Brussels, 1914.
Coley: Annals of Surgery, 1914, lx, 537-566.
Coley: Annals of Surgery, 1914, lx, 772-774.
Barrie: Annals of Surgery, 1913, lvii.
Barrie: Surgery, Gynec. and Obstet., 1914, xix, 42-52.
Barrie: Annals of Surgery, 1915, lxi, 129-141.
Czerney: Münch. med. Wochenschrift, 1895, xlii, 833-835.
Harmer: BOSTON MED. AND SURG. JOUR., 1914, clxxi, 253-261.
Johnson: N. Y. Med. Record, 1894, xlvi, 616-617.
Moullin: Lancet, London, 1898, i, 354-359.
Shield: British Med. Jour., 1897, i, 193-194.
Thomas: BOSTON MED. AND SURG. JOUR., 1901, cxlv, 367-373.
Tosier: Vermont Med. Monthly, 1909, xv, 217-218.
Warren: BOSTON MED. AND SURG. JOUR., 1896, cxxxv, 665-667.
Whitman: Jour. Med. Research, 1914, xxix, 465-472.
Winberg: N. Y. Med. Record, 1902, lxi, 681-684.

CASE REPORTS.

These reports are arranged in groups according to anatomical situation or tissue of origin of the growths. Under these various headings the arrangement is: first, apparent cures, followed in order by cases which have been classed in Group E, Group D, Group C, Group B, and Group A. Personal cases are recorded in detail. Other cases appear in abstract. Reference to detailed reports of such cases appears in parenthesis after the case number in this series. Unless otherwise stated the number in parenthesis indicates the case number in Coley's Brussels Address. When the number is preceded by the word Table, it indicates the case number in the table at the end of Coley's Brussels Address.

INTRANASAL AND ACCESSORY SINUSES.

CASE 1. Personal Case. Referred by Dr. Scudder. Twice recurrent round cell sarcoma of antrum, ethmoid, superior maxilla, posterior septum and naso-pharynx. L. P. Italian woman of 32. House records E. S. vol. 676, p. 221; vol. 702, p. 37; vol. 716, p. 159; vol. 722, p. 57.

March 2, 1910. Operation, Dr. Scudder. Ether Resection of right superior maxilla for sarcoma of the antrum. Ethmoid cells curetted out. Frontal sinus not involved. Sphenoidal sinus opened, contained pus, curetted.

Pathological Report by Dr. James Homer Wright. Malignant Lymphoma. "Specimen consists of the greater portion of the right superior maxilla. Tumor mass fills up antrum, involves bony parts of the right side of the nasal cavity, and also appears on the outside of the bone at two points. Tumor consists of whitish translucent, moderately firm, rather homogeneous tissue. Microscopic examination (paraffin section). Tumor chiefly of cells, generally closely packed together, and a relatively small amount of stroma. Masses of cells are like large lymphocyte forms of cells found in lymphadenoid tissue. Some small lymphocytes are present. There are areas of necrosis."

Oct. 20, 1910. Operation. Dr. Scudder. Ether Partial removal of the septum for recurrent sarcoma.

Pathological Report. (1010-69.) Dr. Whitney. Malignant lymphoma. "A few bits of tissue showing on microscopical examination growth of lymphoid cells, in places slightly elongated and spindle-shaped."

May 11, 1911. Moved to operating room. Seen by Dr. Scudder. "Radical operation with enucleation of eye intended, but impossible to pass Crile ether tube on account of obstruction. Piece of growth removed with tube, evidently sarcoma. Process had extended to left side of nose and face. Only hope lay in attack of both sides of face. Deemed inadvisable."

Pathological Report. (Pieces of tissue removed with Crile tube) (115-42) Dr. Whitney. "Round cell sarcoma. Small pieces of tissue from the nostril, showing upon microscopic examination a small round cell tissue with new-formed blood vessels and remains of small glands scattered throughout it."

May 11, 1911. Toxin treatment instituted and continued three weeks. Maximum dose 3 minims. Reactions severe. Patient followed five months outside hospital, then referred to Boston Dispensary for consolidation in right lung. Later treated at Burroughs Place Clinic, at Long Island, and at Middleboro for tuberculosis of lung.

Feb. 28, 1914. Seen at her home. Still thin but of good color, has done her own housework for the past year, and expects to be confined in a few days. Examination through nose and mouth and opening beneath right eye, which exposes whole nasopharyngeal cavity, shows no evidence of recurrence.

March 26, 1914. Normal child born March 5. Mother still well.

Nov. 2, 1914. Operation, Dr. Scudder. A skin flap swung from forehead to cover defect in cheek following operation March 2, 1910. No evidence of recurrence found at plastic operation.

Criticism. A small round cell sarcoma of the nasopharynx, nose, and left side of face after radical attack of right side. Considered inoperable. No evidence of malignant disease 3 years 5 months after toxin treatment. Recorded in Group F.

CASE 2. Personal Case. Referred by Dr. H. A. Barnes. Small round cell sarcoma of antrum and ethmoid. Throat records, vol. xiii, p. 297. L. A. W., male, 55.

Oct. 14, 1910. Admitted to Ward G. For three months difficulty in breathing through nose. For two months epistaxis twice a week lasting one to six hours. For two months frontal headache, especially on the right, and nasal discharge.

Oct. 14, 1910. Operation, Dr. Barnes. Cocaine. Two large pieces of tissue snared from nose followed by profuse hemorrhage. Ether necessary to check bleeding by packing.

Pathological Report. Small round cell sarcoma. "A small piece of tissue showing upon microscopical examination a solid growth of round and slightly elongated cells infiltrating the tissue in all directions."

Nov. 28, 1910. Operation, Dr. Barnes. Ether. One and one-fourth inch incision on right side of the nose. Nasal process chiseled away and sarcomatous tissue exposed. Posterior nasal plug inserted. Mass scooped out with finger. Antrum then opened through canine fossa and found filled with growth, which was scooped and curetted out. The whole naso-antral wall was found to be destroyed. Antrum and right naris packed with gauze.

Dec. 5, 1910. Toxin treatment started and continued five and one-half months (May 23, 1911). Forty-nine injections. Maximum dose 10 minims. Reactions often severe. During this time the appearance of septum became suspicious and a small piece was removed which showed small round cell sarcoma. Toxins continued two and one-half months longer, at which time a note in the throat department states, "Nose clean; everything in fine condition." Patient had gained 25 pounds.

Dec. 12, 1911. (Seven months since toxins discontinued.) My record reads, "looks well, good weight and color. Working as janitor. No symptoms of recurrence. No evidence of same. Seen by Dr. Mosher who finds no evidence of recurrence."

Last seen Dec. 24, 1913 (two years, seven months since toxins discontinued). In excellent health, good weight and color, working steadily as janitor.

Criticism. A small round cell sarcoma of the antrum and ethmoid. Seems quite improbable that curetting eradicated such an infiltrating process, as recurrence showed. Seems fair to attribute apparent cure in part, at least, to toxins. Recorded in Group F.

CASE 3. Personal Case. Referred by Dr. Crosby Greene. Large spindle cell sarcoma of ethmoid and frontal bone. L. E. F., a woman of 46. House No. 180998.

Feb. 12, 1912. Admitted to Ward G with following history: Eight years ago first noticed movable mass inside the nose, which was partially removed. Recurred one year later. At second operation (Dr. Greene) under ether a considerable quantity of tumor tissue and ethmoidal bone removed with cutting forceps. Pathological report, spindle cell sarcoma. No evidence of recurrence until last year when began to experience frontal headache and frequent epistaxis, and lately dizziness, nausea, and throbbing in head.

Feb. 12, 1912. Operation, Dr. Greene. Ether. Through an incision at side of nose and beneath eye the antrum opened. Its inner wall and middle turbinate removed. Ethmoidal region found filled with vascular growth which was evacuated with curette. A large portion of the right nasal bone was removed and cribiform plate exposed. Brain pulsation visible.

Pathological Report. No. 122-45. Spindle cell sarcoma. "A piece of growth from ethmoid showing upon microscopical examination bundles of large spindle cells interlacing irregularly. Blood vessels in many places with distinct walls."

Treatment with mixed toxins instituted in one week and continued six weeks. Reactions moderate. Maximum dose 4 minims.

Dec. 2, 1913. A letter from Dr. Greene states that one year after operation (Feb., 1913) no subjective or objective evidence of recurrence.

March 6, 1914 (two years since toxins discontinued). A letter from patient states that her health is very good and there is no indication of old trouble.

A letter received from patient May 29, 1914, states she is still in excellent health, two years, two months since treatment discontinued.

Criticism. An extensive infiltrating spindle cell sarcoma. An extensive operation by Dr. Greene. It may be argued that all of the growth was eradicated at operation. This is possible but at the time it did not seem probable. Perhaps this case should be excluded. It has been recorded in Group F.

CASE 4. Personal Case. Referred by Dr. Mosher. M. L., age two. Throat records, vol. xiv, p. 245.

Dec. 3, 1910, admitted to House with history of appearance of sore in the nose accompanied by much discharge and passage of pieces of tissue. The nose appears flattened and one-fourth inch of the anterior end of the septum has disappeared. The exposed septum is much thickened. Tuberculin skin test and Wassermann test negative. December 8, specimen removed for examination.

Pathological Report by Dr. Whitney: fibroma or fibrosarcoma.

Jan. 20, 1911. Operation, Dr. Mosher. Ether. Septum and thickened ethmoidal region removed as far as possible and packed with gauze.

Jan. 24, 1911. Treatment with mixed toxins instituted and continued five months. Reactions slight, rarely severe. Maximum dose three and one-half minims.

Patient has since been seen by me with rhinologist every few months. Now two years, eleven months since toxins discontinued, there is no subjective or objective evidence of recurrence.

Jan. 29, 1915. Patient still free from recurrence. (3 years 9 months since toxins discontinued.)

Dr. Whitney kindly re-examined the sections in March, 1914, and reported, as previously, fibroma or fibrosarcoma.

Criticism. Owing to the pathological report it may be argued that this case should be excluded. It has been included because the process involved not only the septum but extended up into the ethmoid cells. Recorded in Group F.

CASE 5. (Table, Case No. 88.) Case of Dr. J. C. Whitley of St. Louis, Missouri. Sarcoma of superior maxilla, frontal sinuses and ethmoid.

Pathological Report. Spindle cell sarcoma with giant cells. Toxin treatment instituted immediately after an incomplete operation. Maximum dose, 20 minims. Remains of growth sloughed out. Patient in excellent health without signs or symptoms of recurrence two years later. Recorded in Group F.

(To be continued.)

THE STUDY OF DISTURBANCES OF THE STOMACH.

BY H. F. HEWES, M.D., BOSTON.

[From the Clinic of the Massachusetts General Hospital.]

(Continued from page 292.)

All physicians are familiar with the fact that stomach symptoms are perhaps the most common, at all events one of the most common, attributes of the human race. In the study of these manifold stomach conditions he must discriminate as far as possible, by his history record and physical examination, and tube examination in the cases not obviously cases of disease outside of the stomach, whether they are real stomach diseases, or part of a general condition, of debility, or nerve instability, or intestinal atony and constipation, and use the x-ray for their study where his judgment decides for it.

A third special method of investigation of much use in connection with the study of stomach cases is the examination of the feces for blood by the chemical blood test.

A constant or frequent blood finding in the feces in cases with symptoms pointing to stomach trouble is good evidence of the existence of ulcer of the stomach, or duodenum, or cancer. In some cases of duodenal ulcer it is our only means of making a definite diagnosis. Of course blood in the feces may come from hemorrhoids, or intestinal lesion, as intestinal cancer, or ulcer, or colitis. And some of these conditions may give apparent stomach symptoms. But often, as stated, this blood finding taken with other factors of the cases is of much value for the diagnosis of a stomach lesion.

This concludes the review of the methods of clinical study which are utilized in the investigation of cases with symptoms suggesting stomach trouble.

The exact method of procedure of clinical examination for diagnosis differs, of course, with individual cases.

It may happen that the first method of study, the record of symptoms as given by the patient, is sufficient for absolute diagnosis, and further investigation by special methods may be deemed unnecessary. This, for example, is the fact in some cases of bleeding ulcer having a clear record of recent vomiting of blood. Or it may be that this record with the record of physical examination gives a definite diagnosis of some disease outside the stomach, as appendicitis or tuberculosis, which may be deemed a sufficient cause of symptoms.

In all other cases, making the majority of cases with stomach symptoms, it is necessary, however, to go further and make at least a tube examination, and often an x-ray examination also. If the tube examination plus the record previously obtained makes a diagnosis, we may stop here. This is the fact in cases showing twelve-hour food stasis, for example. Such a finding means always obstruction of the pylorus, with rare exceptions due to ulcer or cancer, and often the tube examination tells which of the two, ulcer or cancer.

If with the record and tube examination, diagnosis is not clear, we may resort to x-ray examination. This may show definite evidence of disease, when tube examination is merely suggestive, or when it is entirely negative, or it may exactly locate a lesion already diagnosed by the examination.

The following records of cases taken from my own clinical records, will illustrate the method of procedure followed in the study of stomach cases, and the variation in this procedure according to the character of the particular case in hand. Special cases have been selected also to illustrate some of the most important points already reviewed in regard to the value of the various data obtained by the several methods of examination, for drawing conclusions for diagnosis.

CASE 1. R. L., age 30, Aug. 1, 1911. One week ago the patient, who had had no previous dyspepsia, began to have distress in the epigastrium, coming, perhaps one hour after meals and lasting one to two hours—there was raising of gas and sometimes sour regurgitation, but no vomiting. This has continued to the present time.

Yesterday the patient vomited a quart of red blood. The specimen was seen by her physician.

Examination: Patient rather pale. Hemoglobin, 65%. Physical examination otherwise negative. A diagnosis of bleeding ulcer of the stomach was made without further investigation. It was not considered desirable to use the tube and x-ray examination seemed unnecessary. In fact all that the tube could show would be blood, of which we had evidence in the history, and the x-ray examination would very likely show nothing, as is often the case with fresh bleeding ulcers. The feces examined on the first and second days of observation showed a strong positive blood test. This case could have been one of bleeding from esophageal varix but a diagnosis of ulcer seemed reasonable,

without further investigation. The history, including as it did, one positive objective pathological finding, the blood vomited, was sufficient for the time being. The patient was given medical treatment, was apparently cured, and has had no stomach symptoms since, up to December, 1914.

CASE 2. Age 60, May, 1910. Eight months ago the patient began to have a feeling of distress, and fullness, after eating, with gas and belching. This has continued since. Two months ago the patient began to vomit, at first once or twice a week but for the last two weeks almost daily, often twice a day. Some marked pain before vomiting. Vomiting occurs as a rule soon after eating. Of late the amounts vomited have been large, no blood seen. Much loss of weight and strength.

Examination: Patient thin and pale. Hemoglobin, 80%. Physical examination otherwise negative.

Tube examination: Fasting contents, 500 c.c. of thick fluid containing much food. Blood test positive. No free HCl. Test meal contents, no free HCl. Feces showed a positive blood test.

In this case the history was suggestive of a serious stomach trouble, especially the recent history, but it was not, taken alone, absolutely diagnostic of organic disease of the stomach, since we can get such a history in nerve conditions, or in disease elsewhere affecting the stomach. The recent history was strongly suggestive of stasis which means as a rule cancer or ulcer at the pylorus, but a tube examination, at least, was needed to prove the existence of this condition. Also allowing stasis, special examination was needed to discriminate between cancer and ulcer.

The tube examination here did all these things definitely. It proved stasis by the twelve-hour food residue in the fasting contents, and the absence of free HCl in the fasting and test meal contents indicated that the stasis was due to cancer rather than ulcer. The blood finding by tube and feces examination also proved the presence of organic disease.

In this case no x-ray examination was necessary for diagnosis. It might have had some value as showing the extent of the cancer, but was not needed for diagnosis. X-Ray would undoubtedly have given evidence of pyloric obstruction by cancer or ulcer, probably also would have suggested cancer rather than ulcer, if it had been done in place of the tube examination. But tube examination is more feasible ordinarily than x-ray examination and is therefore done first, often, as in this case, avoiding the expense of x-ray examination. Operation upon this case which was necessarily to relieve the stasis, if not for cure, showed cancer at the pylorus.

CASE 3. R. M., age 25. For three years the patient has suffered off and on from dyspepsia. The symptoms consist of distress in the stomach, coming sometimes soon after eating, sometimes long after eating. Sometimes there is real pain. Sometimes the patient induces vomiting for relief of distress. There is no spontaneous vomiting. No history of blood at any time. If the patient is very careful she may be comfortable without much dyspepsia for months, but she has some symptoms a good part of the year.

Examination: Patient thin and very pale. Hemoglobin, 70%. Physical examination otherwise negative save for soreness and tenderness over the epigastrium.

Tube examination: Fasting contents 40 c.c. of fluid, no food, no blood. Free HCl present. Sediment shows large number of epithelial cells. Test meal contents, free HCl, 0.18%.

X-ray examination shows an irregular projection in lesser curvature, with check of peristalsis at this point, and incisura in opposite wall, peristalsis vigorous above and below area. No 6-hour residue. Sphincter and cap normal. Feces examination negative.

Here the history was suggestive of chronic stomach trouble, but, alone, justified no positive diagnosis of ulcer or cancer. The tube finding was slightly abnormal in quantity and sediment finding of fasting contents, and in high acid content of test meal contents, but did not justify a positive diagnosis of organic stomach trouble. It showed simply a hyperacidity which may mean ulcer or may not.

It was necessary here to resort to x-ray examination. This method gave a positive finding suggestive of penetrating ulcer of the lesser curvature. This finding together with the history of long continued stomach symptoms, justified a diagnosis of ulcer. Operation showed an old perforating ulcer of the lesser curvature.

In this case the x-ray finding was the really important factor for diagnosis.

CASE 4. E. S., age 65. About four months ago the patient began to have fullness after eating and eructations of gas. Was more comfortable when he ate little. No record of previous stomach symptoms. This has continued and symptoms are now more marked but never very bad. No vomiting. Loss of 20 lbs. in six months. Patient feels weak and appetite very poor.

Examination: Hemoglobin, 60%. Physical examination otherwise negative.

Tube examination: Fasting contents, 20 c.c. of dark colored fluid, no food. Marked positive blood test, no free HCl. Sediment contained many broken down cells. Test meal contents. No free HCl.

X-Ray examination: Some irregularity of outline of stomach in lesser curvature. Peristalsis slightly sluggish. No 6-hour residue, sphincter and cap normal.

Feces examination showed positive blood test.

In this case the history was no way suggestive of serious stomach trouble as far as the record of symptoms of stomach trouble went. There were the symptoms which are frequently seen in cases of debility, nerve conditions, ptosis, that is, in conditions other than organic stomach disease. The only suggestive point was the persistence, and the record of loss of weight and strength. The tube finding was very suggestive of cancer of the stomach, the presence of blood and the ab-

sence of free HCl, together with the blood finding in the feces, if such findings are made on two or more separate occasions, giving us fairly positive evidence for diagnosis of cancer. An x-ray examination was desirable for possible confirmation of diagnosis made by tube finding. X-ray finding was suggestive of organic lesion of the stomach, either cancer or ulcer at the lesser curvature. The x-ray finding here was not as conclusive for diagnosis as the tube finding. If we had had the x-ray record alone we could hardly have made a positive diagnosis as the abnormality found was so slight that accident or some extraneous influence acting on the stomach could have given it, but taken with the tube finding, the x-ray finding was important.

With this evidence, a second tube examination and a second feces examination were made. Tube finding No. 2: fasting contents, 25 c. c. of reddish blood-tinged fluid. Some fresh blood was present. Feces examination No. 2 gave a positive blood test. With this record of a positive blood finding in stomach contents on two occasions, and a positive feces blood finding in two instances, together with the absence of free HCl in the test meal contents, a positive diagnosis of cancer of the stomach was made. With the x-ray evidence the cancer was located in the lesser curvature. Operation showed cancer on the lesser curvature.

In this case we needed the evidence of all methods of investigation, the most conclusive evidence being obtained by tube. I call attention to the short history of symptoms, with steady persistence after the start, in a case of fairly advanced cancer. This is not unusual.

CASE 5. O. T., age 24. Four weeks ago the patient began to notice occasional spells of pain located to the right of the navel. The pain came at any time, after a meal, or when empty. It sometimes lasted an hour or two, sometimes 15 minutes. With it has been associated some belching of gas and stomach unrest. No vomiting. This has continued off and on to the present time. In this period the patient has had several spells of weakness and vertigo when he felt as if he was going to faint. He has grown weaker and has grown pale. Bowels regular.

Examination: Hemoglobin, 70%. Physical examination otherwise negative. No tender spots in abdomen.

Tube examination: Fasting contents, 30 c.c. of fluid. No blood test. Free HCl present. Test meal contents. Free HCl, 0.18%.

X-ray examination. Outline of stomach and duodenum normal, good sphincter and cap. Peristalsis normal.

Feces examination repeated twice always shows a blood test on a meat free diet.

Diagnosis: Bleeding in the intestinal tract, probably due to duodenal ulcer. The patient was treated medically and improved. Two months later he had another spell of weakness and blood reappeared in the feces. Operation showed a bleeding duodenal ulcer.

In this case the history was one which could go with any simple indigestion, with an appendix, a gall bladder, etc. The only really suggestive sign was the spells of faintness. Stomach examination and x-ray examination were negative. The feces examination made the diagnosis. If we had depended upon the x-ray alone in this case the disease would not have been discovered.

CASE 6. M. L. Age 40. For two years off and on the patient has been troubled with indigestion. The symptoms are nausea and distress located in the pit of stomach, sometimes pain across the abdomen in the region of the navel. The distress is apt to come two or more hours after a meal, but may come at other times. Upon two occasions there has been vomiting with the pain. He has had about five spells in two years. Between spells he may be free from trouble or have mild dyspepsia. Bowels are constipated. He uses laxatives frequently. This spell began a week ago. He has a dull pain much of the time above the navel, and nausea. He vomited once four days ago. No blood seen.

Examination: Hemoglobin, 100%. Temperature, 99.8. Pulse, 86. White count, 15,600. Marked tenderness in the right iliac fossa. No actual spasm. A diagnosis of appendicitis was made. Here the symptoms were located by the patient in the stomach. The history could go with organic stomach trouble. As general examination however located a definite disease outside of the stomach as a cause of symptoms, and no special examination by tube or x-ray was necessary. Appendicitis was found at operation.

Note that the history in this case, of intermittent attacks of stomach trouble over a long period of time, is not unlike that found frequently in cases of duodenal ulcer.

CASE 7. R. P. Age 28. For two years the patient has been subject to spells of stomach trouble, with symptoms of distress, often acute pain, coming two hours or more after eating and relieved by food. There is much gas, and heartburn, sometimes pyrosis, actual regurgitation of acid fluid. Occasionally with bad pain there has been vomiting. No blood ever seen. The vomitus has consisted of clear watery fluid without food. There have been perhaps three spells a year lasting for three weeks to two months, with periods between of complete freedom from symptoms.

Examination: Hemoglobin, 100%. Physical examination negative.

Tube examination: Fasting contents, 80 c.c. of clear fluids containing free HCl. No blood, no food. Sediment normal. Test meal contents: Free HCl, 0.26%, *i.e.* hyperacidity. Feces examination, negative.

X-ray examination: Outline of stomach and duodenum normal. Peristalsis normal. No residue.

The history of this case suggests hypersecretion or hyperacidity. It could be that of a duodenal ulcer of which hypersecretion is often an associate, or a gastric ulcer, or a simple hyperacidity, or it could have been a gall bladder or neurosis without actual hyperacidity. I have seen such histories with a normal acid content or even a low one. The tube examination proved

the existence of hypersecretion and hyperacidity but it proved nothing as to whether it was a simple hyperacidity or a hypersecretion secondary to ulcer.

X-Ray examination was necessary for further light. The x-ray examination showed a normal stomach and duodenal outline and normal, though active, peristalsis. As a result of the full examination a diagnosis of hypersecretion was made. Ulcer cannot of course be absolutely ruled out by a negative x-ray in such a case, but with a clear tube finding of hypersecretion accounting for symptoms by the discovery of a well-recognized stomach disease, a negative x-ray certainly leaves this diagnosis established for the time. As a matter of fact, this case was operated upon through the advice of a surgeon in spite of the examination, and the stomach opened. No evidence of ulcer was found. I have seen many cases with an exactly similar history to this case and similar findings by tube, give an x-ray finding suggestive of duodenal ulcer, where operation has shown chronic duodenal ulcer. This case gave the symptom complex regarded by Monagan as diagnostic of duodenal ulcer.

CASE 8. R. I. Age 50. For 15 years the patient has suffered off and on from attacks of stomach trouble consisted of distress, sometimes soon after food, sometimes two hours or more after eating, gas, and bloating. Vomiting was rare in the early days, but of late has been frequent. The trouble came by spells with long intervals of freedom from symtoms. About six months ago a spell began which has continued ever since. Recently vomiting has occurred daily often after each meal. Amount of vomitus sometimes large. Vomitus occasionally of dark color. There has been much loss of weight recently.

Examination: Hemoglobin, 75%. Patient very thin. Physical examination otherwise negative.

Tube examination: Fasting contents amount, 1000 c.c., much food present. Blood test faintly positive. Free HCl present. Test meal contents. Free HCl, 0.11%, *i.e.* normal acidity. Feces examination, blood test positive.

X-ray examination: In antrum and at pylorus an area of absent peristalsis, with irregular outline to shadow, sphincter absent, duodenal cap not well seen. Peristalsis above lesion normal. Large 9-hour bismuth residue.

In this case the history with its duration and record of intermittent attacks suggested chronic ulcer, finally contracting and closing the pylorus as indicated by the advent of persistent vomiting. The tube examination gave absolute evidence of stasis, that is, either cancer or ulcer at the pylorus, but as free HCl was present did not discriminate between cancer and ulcer, as in Case 2, where the absent free HCl favored cancer.

The x-ray examination was made to get evidence, if possible, for discrimination. The x-ray picture here though compatible with ulcer was more suggestive of cancer, with the irregular character of the shadow and the absence of vigorous peristalsis above the pylorus. Ulcer usually has deep and vigorous peristalsis. Cancer was found at operation.

The long history and tube examination together really favored ulcer, though one factor of the tube examination, the presence of blood, together with the blood finding in the feces was more suggestive of cancer, as constant bleeding is much more common with cancer than with chronic ulcer. The x-ray here turned the tide of diagnosis to cancer. Possibly this was a case of cancer developing on an old ulcer which would explain the combined picture, the long history of trouble, with the actual presence of cancer. One may say that an x-ray examination was not absolutely necessary in this case as the tube finding showed definitely that either cancer or ulcer at the pylorus was present and therefore that operation was necessary. Actual identification of the nature of the lesion could be made by operation better than by x-ray, but it is useful to know as much as possible about the case before operating even when operation is assured. Sometimes an x-ray indicates that cancer involvement of the stomach is so extended that operation is useless, and saves this step.

CASE 9 M. L., age 30. For two years the patient has had spells of stomach trouble consisting of distress and fullness, and raising of gas soon after eating. Occasionally there has been vomiting for periods of a day or two. The patient drinks a good deal of liquor and occasionally goes on sprees. The stomach trouble is especially bad after a spree. The weight is about 20 lbs. below his best weight.

Examination: Hemoglobin, 95%. Physical examination otherwise negative.

Tube examination: Fasting contents, 60 c.c. of thick mucous fluid pouring like mucilage. No food, no blood, no free HCl. Sediment contains many epithelial cells. Test meal contents: No free HCl. Total acidity, 0.07%. Feces examination negative.

(To be continued.)

Reports of Societies.

CLINICAL CONFERENCE OF THE NEUROLOGICAL INSTITUTE, NEW YORK.

REGULAR MEETING, JAN. 21, 1915. DR. J. RAMSAY-HUNT IN THE CHAIR.

PLURIGLANDULAR INSUFFICIENCY OF SCLERODERMIC TYPE.

DR. WALTER TIMME presented a woman fifty-five years of age, unmarried, who entered the Neurological Institute in the service of the third division on January 5, 1915, complaining of general nervousness, weakness, inability to stand or walk, and numbness and tingling of the extremities. This condition had been progressing for one and a half years, and with some slight exceptions, had been

getting worse during this entire time. At the onset she first felt a numbness in her hands, and began to be clumsy in their use. She then noticed a gradually increasing weakness in her hands and arms so that she was unable to use a spade in the garden. Later, she was unable to get up from a chair or get out of a hammock. She had cramps in the calf muscles at night and some muscular pains in the thighs and legs in trying to get about. In the fall of 1913 she noticed a stiffness of the neck with pain which lasted until the spring of 1914, accompanied with difficulty in swallowing and with some inability to open her mouth as far as previously. The joints were never painful or swollen. Gradually the motion of the different members became more and more limited and she became bedridden and extremely helpless. During this time she had several falls in trying to get about and undertook osteopathic treatment for the relief of her condition with no effect. There has been some improvement in her arms, but her legs have become progressively worse. Her menstruation ceased two years ago. Her previous history gives the usual diseases of childhood. Eight years ago she had severe pain in the left elbow which was treated by osteopathy and five years ago she had a right sciatica. Syphilis is denied, there are no drug addictions, her habits are good and heredity negative. Her neurologic status upon entrance is as follows:

The patient is fairly well nourished, but presents a picture of trophic disturbances. There is some cyanosis of the extremities, her skin is dry and scaly where it is not glossy, the hair dry and lusterless, and there is a symmetrically disposed pustular eruption on the face. Upon the upper chest and neck there is an area of brownish pigmentation. In various parts of the body there are areas of induration in the skin without discoloration, and also below the skin. These are chiefly in the thighs and lower legs. The skin of the face is dry and drawn, so that it presents a mask-like appearance and offers some opposition to the full opening of the mouth. She says that there is some difficulty in opening the eyes wide. Her pulse rate is 110 and her blood pressure 160. The muscular system is practically everywhere involved atrophically. There is atrophy of the arms, forearm, and largely of the hand muscles, both flexors and extensors, together with contractures; so that she cannot extend the forearm from the arm or the hand from the forearm. In the legs and thighs similar atrophies are present, most marked in the lower legs where the calf muscles and the peronei are involved. She can lift the knees in bed only for a short distance, perhaps a foot or so, and can only slightly abduct them. She cannot sit up unassisted nor can she stand. There is some slight facial weakness on the right side, and some slight difference in the palpebral fissures. There is no myokymia, no tremor; her coördination is good.

The knee jerks upon entrance were absent, but can now occasionally be elicited. There is no Babinski, no clonus. The other reflexes are present and equal. The right pupil is slightly greater than the left but both react equally well to light and accommodation. There are no sensory changes excepting perhaps some slight diminution over the indurated areas. There is no loss of sphincteric control. She has a chronic constipation. The thyroid is slightly enlarged but soft. Emotional control was diminished, so that she would cry at being assisted to a sitting position for fear of falling; she is irritable, finding fault with her room-mate and with the nurses without sufficient cause. X-ray examination of the left elbow joint is negative, though there is a suspicion of rarefaction in the bony structures. Electric examination of the muscles showed no R. D.; urine, blood and Wassermann are all negative.

So that we have before us a patient in the prime of life, giving evidence of a profound change in many of the tissues of a character that causes a perversion of their functional activity. The onset is concomitant with the beginning of the involutional period of life and with the cessation of menstruation. If we take the symptoms in groups we can readily see a correspondence in them with those due to defective function of various internal glandular organs—the scaly, dry skin to hypothyroidism, the pigmentation to adrenal insufficiency, the acroparesthesiae and cyanosis of the extremities to a combination of ovarian and chromaffin insufficiency. Furthermore, many of the clinical evidences seem to point to entities of which in the past we have seen examples. Thus, to mention two of the more striking ones, dystrophia muscularum progressiva and scleroderma. The patient might, with some justice, be placed in this latter class. She has the sclerodermic condition "en plaques," the mask-like face, the indurated skin and underlying masses, the atrophies and succeeding contractures and disturbances of motility, the falling out of the hair, the pigmentation, and the erythromelalgia. She has also some of the features of the ordinary muscular atrophy with the wasting of the large thigh muscles and the gradual involvement of other groups. The deep reflexes are returning, any dysphagia she might have had, had disappeared; and there is no fibrillary twitching. The age of onset is rather against this view, also the wasting of the intrinsic hand muscles. A disturbance of the internal secretions may have for its results many of the symptoms common to these disorders. Indeed Cassirer, Ballet and Delhelm and Notthaft have observed cases of progressive muscular dystrophy, scleroderma and Basedow's Disease seemingly combined in one patient, and have come to the conclusion that this incidence of all three had as a basis, a disturbance of the internal secretions. Cassirer goes even further. The disturbance of these secretions is due, according to him, and I agree thoroughly in his views, to a perversion of the function of the vegetative or autonomic nervous system. Indeed he goes to the extreme point of declaring that no one single ductless gland can be alone in its perversion, but must of necessity drag every other one into the arena; so that the various types of the tropho-neuroses assume the characteristics of the condition due to the abnormal activity of the most affected gland. If we examine these clinical types closely we will not fail to find evidences of other glandular disturbances also. And for this reason have we the nuances through which imperceptibly one disease merges into the other, as one or the other internal secretions controls the situation. In the present case, the difficulty probably began in the ovarian involution. The usual compensation for this condition is in an increase of suprarenal capsule secretion which is inhibitory to the suprarenal secretion itself. If this compensation fails, then an increased adrenal content results, with corresponding effect upon the thyroid and so a very complex picture pre-

sents itself. The reason for the assumption of an autonomic basis for this interactivity is, that after section of various of the sympathetic nerves such as the splanchnic, no complementary action results; and further, that autonomic stimulation will produce changes in the internal secretions. This patient has been for less than three weeks on ovarian extract and thyroid, and she is beginning to improve. Her pustular eruption is better, the pigmentation is less intense and she moves her arms and legs more freely than before. How far she will improve time alone can tell.

A CASE OF SUSPECTED FRONTAL NEOPLASM.

DR J. W. STEPHENSON presented from the second division, a man 52 years of age who denies alcoholism, venereal disease, or other previous history of significance. No lead line on the gums. He was first seen on the ninth of January, 1915, his chief complaint being that of frontal headaches of at least six months' duration. He was mildly confused and in consequence of this confusion a detailed account of his immediate history was impossible. However, he volunteered the information that "he could not see quite so well." There was apparently general lassitude and yawning was conspicuous. Examination revealed a man of small but firm stature, confused, answering questions only in monosyllables with a husky voice. His station was unsteady, falling first to one side, then the other, gait was slow and deliberate. There was no apparent ataxia, nor could any tremors be elicited. The knee jerks were elicited only upon reinforcement, the ankle jerks were present and equal, the plantar responses were flexor, there was no clonus. The right epigastric reflex responded more promptly than the left, the abdominals were present but inactive. The eye mobility was good, there was no nystagmus. No diplopia. The pupils were irregular in outline but reacted to light, coming down slowly. Thoracic and abdominal cavities negative. No tenderness could be elicited over the skull nor was there any diffierence in the percussion note.

Patient has now been under observation for 13 days during which there has been a slow but steady progression of the mental confusion, until it is now practically impossible to get any coöperation from the patient. However he does volunteer the information that his headaches are less severe in a recumbent posture. Analgesics have been used without relief. Patient is now incontinent and uncleanly.

On January 20, physical findings were as follows: The knee jerks which were previously obtained only on reinforcement are now active, and there is a definite Babinski response on the left side, questionable on the right. The epigastric reflexes are not elicited. Pupils very slow. His confusion is decidedly more pronounced. Temperature has ranged between 98° and 99.5,° pulse between 68 and 104, the average being 88; respiration between 16 and 24, average 20; blood pressure between 135 and 150. Blood, urine and feces negative. The serum Wassermann is negative. Spinal-fluid; Wassermann is negative, three cells, considerable excess of globulin, Fehlings reduced. The eye report by Dr. Holden is as follows: "Disc outline slightly blurred, veins over-filled suggestive of beginning pappiloedema." In this connection Dr. Stephenson mentions that the observations made by him disclosed a change in the condition of the fundi after lumbar puncture; the margins of the discs being decidedly more distinct the day after the puncture. Four days after the puncture the disc showed practically the same findings as before the puncture.

I should have mentioned that the patient has had lots of trouble and worry, his wife being alcoholic, and for a long while the headaches were assumed to have been of a functional nature. There has been no vomiting but occasional nausea has been experienced.

Three possible diagnoses have been considered in this case, namely frontal neoplasm, advanced paresis and manic stupor, the latter of which could be eliminated by the presence of the Babinski phenomenon, the nature of the pupilary reflex and the condition of the discs. Advanced paresis is not an impossibility, particularly inasmuch as the ophthalmologist is not convinced that there is an actual beginning choked disc, but Dr. Stephenson considers that the changes observed in the discs before and after lumbar puncture are of great significance; also the globulin reaction was decidedly pronounced and not unlike that which is frequently observed in compressions due to spinal or cerebral neoplasm. The negative Wassermann reaction also militates against the diagnosis of paresis. There is no distinct speech defect though there was a peculiar huskiness of his voice. Test phrases were well performed when coöperation could be obtained. It is a well known fact that frontal neoplasm may exist for a long period of time without developing choked disc.

SYPHILITIC HEMIPLEGIA IN A CHILD AGED FIVE.

DR. T. J. KEYSER presented from the first division a little girl with left sided hemiplegia.

The patient was brought to the Hospital by her father January 16, 1915, complaining of headache, pain in the eyes, vomiting and paralysis of the left arm and leg. The father is being treated at present for pulmonary tuberculosis. He denies ever having had a chancre and shows no evidence of syphilis. The mother and two brothers are living and well. The patient has always been a bright, healthy child.

Four weeks ago (December 18th) the patient complained of pain in the left side of the neck. There was moderate enlargement of the glands of the neck on the left side. In a few days the pain and swelling disappeared entirely.

Three weeks ago (December 25th) she complained of general headache and pain in the eyes. These symptoms have been present almost constantly since, although less severe during the past week. Since the 25th she vomited several times each day. The vomiting occurred suddenly without nausea and was projectile in character.

One week ago (January 9th) it was noticed that the patient could not use the left hand as well as usual. This weakness gradually progressed and extended so that in three days there was complete paralysis of the left leg and arm. There is no history of convulsive attacks or mental symptoms. The temperature has been taken two or three times a day by the father and was normal throughout except on one occasion when it was 99.2°.

The patient is a bright, intelligent child, showing no evidence whatever of mental symptoms. She is well nourished and normally developed. There are no signs at all of congenital syphilis, or tuberculosis of the lungs, bones, etc. The left arm and leg are completely paralyzed. There is a moderate but distinct weakness of the left facial muscles of the

supranuclear type. Otherwise the cranial nerves show no involvement whatever. The deep reflexes are all present, equal and normally active. The abdominal and epigastric reflexes are absent on the left side. Babinski sign is present and Hoffman's is at times obtained on the left side. The electrical reactions are normal and there is no stereognosis. The pupils are equal regular and react promptly. The fundi are normal and there is no restriction of the visual fields.

The temperature varies from 98° to 100,° usually being higher in the afternoon or evening. The pulse rate varies from 96-128. The blood examination shows 16,000 W. B. C. of which 79% are polymorphs. The urine is normal. Von Pirquet's cutaneous reaction negative. The cerebral spinal fluid shows 140 cells to the c. m., of which 132 are small lymphocytes. Unfortunately the Wassermann test was not done on the c. s. fluid. The serum Wassermann was positive at the Neurological Institute. A subsequent Wassermann test by the Board of Health was also strongly positive. The history of the headache and vomiting followed by the development of a hemiplegia of the cerebral type are indicative of a brain lesion. The tubercle bacillus is a possible etiological factor, indicated by the pulmonary tuberculosis of the father, the masses of lymphocytes in the spinal fluid, and the moderate evening elevation of the temperature. However, the positive Wassermann reaction together with a pleocytosis of the spinal fluid are in favor of syphilis as the probable etiological factor, in spite of the absence of all other clinical evidence of this disease. This diagnosis was later corroborated by a prompt response to antisyphilitic treatment.

Book Reviews.

Fever—Its Thermotaxis and Metabolism. By ISAAC OTT, A.M., M.D. New York: Paul B. HOEBER. 1914.

The contents of this book represent three lectures, delivered before medical students. In these three lectures the author discusses fully the various aspects of fever, especially from the experimental and physiologic point of view. Ott himself has made notable researches in this subject. The work is a very complete resumé and is not at all elementary, as might be assumed from the fact that the lectures were delivered before medical students.

Practical Therapeutics. With Especial Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By HOBART AMORY HARE, M.D., B.Sc., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College of Philadelphia. New (15th) edition, thoroughly revised and rewritten. Octavo, 998 pages, with 144 engravings and 7 plates. Philadelphia and New York: Lea and Febiger. 1914.

The fifteenth edition of this book appears in form similar to its predecessors, although, as has been the custom of its author, the text has been liberally revised to meet the changing therapeutic outook. In this edition Dr. Hare has had the benefit of the expert knowledge of Dr. George E. deSchweinitz, Dr. Edward Martin and Dr. Barton C. Hirst in revising the sections dealing with diseases of the eye; with antiseptics; with venereal disease; and with diseases of the puerperal state respectively. In general, the volume is again decidedly to be recommended as an extremely convenient and practical treatise on therapeutics in the broad sense.

On Dreams. By PROF. DR. SIGMUND FREUD. Only authorized English translation by M. D. Eder, from the second German edition. New York: Rebman Company. 1914.

This little book is not a translation of Prof. Freud's larger work, "Traumdeutung," but a brief popular account of the more essential points of his theory of dreams. A footnote on page 104, in which the translator says "the words from 'and' to 'channels' in the next sentence is a short summary of the passage in the original. As this book will be read by other than professional people the passage has not been translated, in deference to English opinion," shows that the work has been modified for popular reading, and indicates that state of mind of the public which forced Havelock Ellis to publish many of his strictly scientific studies of sexual problems in a foreign tongue.

Lead Poisoning. By SIR THOMAS OLIVER, M.A., M.D., M.R.C.P. New York: Paul B. Hoeber. 1914.

Sir Thomas Oliver has compressed into a small book of a little over 200 pages much information concerning lead poisoning. As is well known, he has for many years been interested in industrial diseases and the dangerous trades, in fact, long before there was any popular concern with the subject, and it is not too much to say that he is largely responsible for the increasing public interest in them. Lead poisoning is one of the most important and one of the most widespread of all the industrial diseases. The author discusses the sources of lead poisoning in the various trades, the clinical features and treatment, both preventive and curative. In an appendix are given the factory and workshop orders of the English Government. It is an important but authoritative monograph, based largely upon the writer's experience and researches.

THE BOSTON
Medical and Surgical Journal

An independently owned Journal of Medicine and Surgery, published weekly, under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, MARCH 4, 1915.

EDITORS.

ROBERT M. GREEN, M.D., *Editor-in-Chief.*
WALTER L. BURRAGE, M.D. } *For the Massachusetts Medical Society.*
FREDERICK T. LORD, M.D. }

COMMITTEE OF CONSULTING EDITORS.

WALTER B. CANNON, M.D. — ALLAN J. McLAUGHLIN, M.D.
HARVEY CUSHING, M.D. — ROBERT B. OSGOOD, M.D.
DAVID L. EDSALL, M.D. — MILTON J. ROSENAU, M.D.
REID HUNT, M.D. — EDWARD C. STREETER, M.D.
ROGER I. LEE, M.D. — E. W. TAYLOR, M.D.

ADVISORY COMMITTEE.

EDWARD C. STREETER, M.D., Boston, *Chairman.*
WALTER P. BOWERS, M.D., Clinton.
HOMER GAGE, M.D., Worcester.
JOEL E. GOLDTHWAIT, M.D., Boston.
LYMAN A. JONES, M.D., North Adams.
HUGH WILLIAMS, M.D., Boston.
ALFRED WORCESTER, M.D., Waltham.
ROBERT B. OSGOOD, M.D., Boston, *Secretary.*

ERNEST GREGORY, *Manager.* W. M. LEONARD, *Consulting Manager.*

SUBSCRIPTION TERMS: $5.00 *per year, in advance, postage paid, for the United States.* $6.56 *per year for all foreign countries belonging to the Postal Union.*

The editor will be in the editorial office daily, except Wednesday and Sunday, from twelve to one-thirty p. m.

Papers for publication and all other communications for the Editorial Department should be addressed to the Editor, 126 *Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish the first one hundred reprints for half the cost price.*

All letters containing business communications, or referring to the publication, subscription, or advertising department of the Journal, should be addressed to

ERNEST GREGORY, *Manager,*

126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

THE CLASSIFICATION AND DIAGNOSIS OF DIARRHEA IN BOTTLE-FED INFANTS.

BY reason of their commonness the diarrheas of infancy constitute a subject of perennial interest, and it is highly desirable that the general practitioner should, as far as possible, be able to recognize the different varieties. All the forms are naturally more frequent in summer than in the other seasons, but all may be met with at any time of the year. The two great classes are intestinal indigestion and infectious diarrhea; and Dr. Roger H. Dennett, adjunct professor of diseases of children in the New York Post-Graduate Medical School, in a recent paper on this subject, places in a third class the miscellaneous varieties, among which are included cholera infantum (in which no bacterial micro-organism has as yet been isolated as its direct cause), Finkelstein's sugar intoxication, marasmus, diarrhea from the continued daily use of cathartics, and mechanical diarrhea due to the ingestion of some specific unfit article of food.

Dr. John Lovett Morse gave in the *American Journal of the Medical Sciences* for January an admirable exposition of the various forms of infectious diarrhea, and he divides the micro-organisms which are its primary cause into three main classes: the dysentery bacillus in all its forms, the gas bacillus and similar organisms, and thirdly, other organisms, of which the most important are streptococci, the colon bacillus, and the pyocyaneus. It is impossible to determine from the symptoms what form of organism is the cause of the disease, and there is nothing about the stools which will aid in the differentiation except, in rare instances, the peculiar green color caused by the *Bacillus pyocyaneus*, and also in cases where the streptococcus is the cause. In the former instance the green color will disappear on the addition of nitric acid, and in the latter the streptococcus, which is usually present in large numbers, can be easily recognized by the microscope.

Morse describes a simple method by which the presence or absence of the gas bacillus may be determined in from eighteen to twenty-four hours, but very properly adds the caution that in interpreting the results of the test it should be borne in mind that the presence of a few gas bacilli does not necessarily prove that they are the cause of the disease. While it is not usually difficult to differentiate between the two, the only condition with which a typical case of infectious diarrhea is likely to be confused is intussusception, although when the temperature is high and the symptoms of cerebral irritation are marked and develop before the appearance of the characteristic stools of mucus and blood, the affection may be mistaken for some form of meningitis. Here, if from the symptoms and physical signs the diagnosis is not plain, a lumbar puncture will settle it at once. In mild cases of infectious diarrhea, however, it is not infrequently difficult, if not impossible, to distinguish between this and indigestion with fermentation, and in the diagnosis the most important single symptom is no doubt the temperature curve; for while in indigestion with fermentation the elevation of temperature is either very slight or high but of short duration, in infectious diarrhea, although usually not very high, it is constant and continuous. In many instances a positive diagnosis can be made only by means of a bacteriological

examination of the stools, and as regards the presence or absence of dysentery bacilli, there is unfortunately no method for determining this which does not require special media and a fairly well-equipped laboratory. Infectious diarrhea in infancy is always a serious disease, and the prognosis should, therefore, always be a guarded one.

It can readily be understood how the two forms, infectious diarrhea and intestinal indigestion, may overlap each other, as a baby with any form of indigestion is naturally more susceptible to an infection. Intestinal indigestion however, constitutes by far the largest class of infantile diarrheas, and it is met with more constantly at all seasons than the other, which is more often seen in hot weather. The subdivisions under intestinal indigestion adopted by Dennett are made upon the practical basis of the foods previously administered, though if properly interpreted, he maintains, these have a scientific basis too. Simple intestinal indigestion is caused by feeding mixtures containing more fat, sugar, proteid or starch than the infant is capable of digesting, or by feeding these elements in a form which cannot be digested, and most infants with a diarrhea due to such trouble have a combination of fat, sugar and proteid indigestion which perhaps was originally occasioned by one of these constituents only. Indigestion caused by fat is usually due to the use of top-milks or cream, although such feedings by no means necessarily cause indigestion in all infants. Sugar indigestion is caused, of course, by giving too much sugar, and gruels when given in milk and sugar mixtures, are undoubtedly a contributing factor in the causation of diarrhea in very young infants. Underfeeding includes all those cases in which sufficient food has not been given to make the infant gain, and many of these babies have a more or less severe grade of intestinal indigestion, while their "tolerance" (ability to digest and assimilate food) has been gradually reduced during the time this has lasted. Overfeeding is apt to be easier to treat if it occurs in a well-nourished child. The diagnosis of simple intestinal indigestion is not difficult. The onset is gradual and there is no fever. While the stools may vary greatly in color and consistency their odor is generally normal. There is no blood, unless this should be due to some local condition in rectum or anus, and mucus is practically always present.

The fermentative type of diarrhea is caused and aggravated by the intestinal bacteria which feed upon carbohydrates, and putrefactive diarrhea by those which feed upon protein, and the former is far more common because of the universal custom of giving a large amount of sugar to bottle-fed infants. It is easy to distinguish either of these from simple indigestion by the fact that a low grade of fever (usually from 99 to 102° F.) is present in the fermentative and putrefactive types. Much more difficulty is found in differentiating between the fermentative and the putrefactive type, a bacteriological examination of the stools not being practicable for the general practitioner. Apart from the stools, there are two main points of distinction. First, the fermentative form almost always occurs in the infant who has been fed a high sugar or starch diet, while the putrefactive is met with in infants who have been given strong milk mixtures with little or no starch in them, or in older children who are fed on a mixed diet. The second means of distinguishing between the two is the therapeutic test. A fermentative diarrhea will respond readily to a mixture made up of one-third milk and two-thirds water, the two being boiled together without sugar. In putrefactive diarrhea this treatment will be of no service, but the condition will yield to a starch diet, consisting of a thick gruel. When employing the therapeutic test Dennett states that it is usually better to give a boiled milk mixture to infants under five or six months and the gruels to those over that age, since younger infants are more liable to fermentative diarrhea and older ones to the putrefactive form. The sour odor of the stools in fermentative diarrhea is very characteristic, and the foul odor of putrefactive diarrhea (resembling that of decayed meat) is also very helpful in the differential diagnosis. Again, the reaction of the stools in fermentative diarrhea is always acid, and the acidity usually occasions inflamed buttocks and chafing, while in putrefactive diarrhea it is always alkaline, and the skin is not apt to be irritated.

CARNIVOROUS AND HERBIVOROUS TYPES IN HUMAN EVOLUTION.

As a leading article in this issue of the JOURNAL we publish the initial paper in an important piece of research by Dr. John Bryant on the carnivorous and herbivorous types in man, and the

possibility and clinical utility of their recognition. It is suggested that humankind may conveniently be classified into these two animal types and that upon the basis of this classification valuable clinical differentiations may be made and practical details of hygiene, diet and medical treatment determined.

Roughly speaking, the herbivorous type is short and rotund, the carnivorous tall and lean. These superficial characteristics are paralleled, according to Dr. Bryant's elaborate tabulation, by corresponding contrasts in nearly every detail of anatomy and physiology. On these contrasts and their combinations are based the various so-called diatheses.

As a matter of fact, apart from the important possible clinical bearing of this classification, such a differentiation of human types seems equally of interest from the evolutionary point of view, since probably both types represent diverse lines of development from lower animal forms. Racially the carnivorous type is the more active, energetic and dominant; the herbivorous type more stable, artistic and contemplative. Each has the advantages and dangers of its characteristics: the herbivorous type tends to survive by virtue of its stability, the carnivorous by its superior energy and versatility. On the whole, it would appear as though in the history of the world, progress has been achieved chiefly by successive carnivorous races, which finally perish, falling victims to their inherent defects, and are replaced by the evolution of new carnivorous types from the herbivorous substratum. Probably the carnivorous type is really the superior, though it encounters peculiar perils in maintaining that superiority, and as a matter of fact it appears, certainly in the majority of American communities, that the carnivorous type predominates. This is evidenced by the rapid evolution, in the second and third generations, of carnivorous types out of immigrants of herbivorous type from European countries. Whether this is solely a result of diet or climate is not wholly clear.

Another aspect of possibly considerable significance in this consideration is that in their origin these somatic types are, to a certain extent, sex types; the fundamental feminine type is herbivorous, the fundamental masculine type is carnivorous. Whether this differentiation originally proceeded from occupation is not certain, but seems definitely likely. The man adapted to the hunt acquired height, strength and the leanness essential for speed, and thus became carnivorous; the woman, adapted to more sedentary domestic occupations, remained herbivorous. Now perhaps the most striking fact of all is, that in the course of evolution, as these types have tended to intermix between the sexes, the physical type of each sex has tended to approximate a common mean; with the progress of that form of evolution which we call civilization, the masculine type has tended to become more feminine and the feminine type more masculine. This is particularly obvious in the present day and generation to anyone thoughtfully engaged in the practice of medicine. Especially is it notable that the short, rotund, typically feminine type is disappearing before the predominance of women of the tall, slender, more masculine physique. Between the masculinized woman and the femininized man there remain, of course, fundamental skeletal and other differences, but the sex types are not so widely diverse as they probably were in remoter times.

It is, of course, impossible to foresee what may be the ultimate course of reciprocal evolution between the carnivorous and herbivorous types. Ideally it should lead to the evolution of a standard human type, in which, as the sex types approach each other, they should be mutually benefited anatomically, physiologically and intellectually. Probably such an ultimate ideal type would be largely a persistence of the carnivorous form by constant absorption from the herbivorous substratum of its mental and physical merits, without its defects. In the lower animal kingdom the ultimate dominance of the carnivore over the herbivore seems established. Such is the story of the past, as written in the chapters of biology. Such, or somewhat similar, may be expected to be the future story of man as written in the later chapters of human evolution.

OPERATION OF THE HARRISON BILL.

In an insert in the Journal for February 18 we commented editorially at length on the provisions of the new Harrison drug bill, on its relation to the medical profession, and on the duty of physicians in complying with its provisions. One important statement unintentionally omitted in this comment should be called

to the attention of the profession. It is as follows:—

"While the Federal law requires the prescription to bear the date and full signature of the prescriber, Article 12 of the Regulation makes it necessary that the prescription should carry the patient's name and adress as well."

The Harrison law went into effect on Monday of this week. On or before Friday of this week, March 5, it is the further duty of every physician, if he has not already done so, to take an inventory of all opium, salts of opium, coca leaves, cocaine, alpha and beta eucaine, and preparations containing the same in his possession. This inventory must be sworn to before a justice of the peace and kept on file subject to inspection, together with the record which the law requires of all administration, dispensation or distribution of these drugs after March 1. The office of the internal revenue service of the United States Treasury Department has furfurther called attention to the following statements with reference to the operation of the Harrison law:—

"That the period for which registration must be made before March 1 is from March 1 to June 30, 1915, both dates inclusive, or one-third of the Government fiscal year.

"That the registration fee for said period is 34 cents.

"That the order blanks required under the provisions of the Act will be obtainable from the Collector at $1.00 per hundred.

"That the word 'person' as used in this Act shall be construed to mean and include a partnership, association, company or corporation as well as a natural person.

"That any person who violates or fails to comply with the requirements of the Act shall on conviction be fined not more than $2000 or be imprisoned not more than five years, or both, in the discretion of the Court."

PROMPT USE OF DIPHTHERIA ANTI-TOXIN

THE Boston Board of Health has recently issued to physicians in the city a copy of its resolutions, urging the early use of diphtheria anti-toxin in all cases of proved and suspected diphtheria, without awaiting the result of bacteriologic determination. The text of the resolution is as follows:—

"At a meeting of the Board of Health held this day, the following procedure in the use of anti-toxin in the treatment of diphtheria was approved and is hereby recommended to the physicians of the city:

"That anti-toxin be used at the earliest possible moment in all cases of real and suspected diphtheria, without waiting for the bacteriological examination of cultures.

"It is further recommended to consider all cases of croupy breathing in children, which continue six hours or more, as severe cases of diphtheria, *i.e.* laryngeal diphtheria, regardless of other clinical signs or bacteriological examinations. These cases should be treated with single maximum doses of antitoxin and should be intubated within 24 hours from time of use of anti-toxin, unless marked improvement in breathing is noticed; since single maximum doses as above described are far more efficacious than repeated doses of less potency, and therefore should be given in this way, while the practice of giving repeated injections of smaller doses should be abandoned."

During the preceding week there were 47 cases and seven deaths of diphtheria in Boston. This is not an unduly large number of cases but the relatively high death-rate affords reason for again emphasizing to physicians the cardinal importance of promptness in the administration of anti-toxin to suspected cases. The Board of Health further wisely urges the administration of an immunizing dose of antitoxin to persons who have been exposed but as yet show no signs of infection.

THE FAILURE OF AN IMPORTANT BILL

IN the issue of the JOURNAL for February 11, we commented editorially on the bill then pending before the General Court providing a maximum fine of $300 for violation of regulations made by the state department of health. This bill was intended to remedy the important defect in the structure of the act establishing this new department in the failure to provide penalties for such violation. In spite of the fact that this obviously desirable bill was advocated by Dr. McLaughlin, the state health commissioner, Dr. Walter P. Bowers and other distinguished representatives of the medical profession, it was summarily defeated in the Senate on February 23 without division or debate. As a result the state department of health, though given full power to make regulations, has no authority to enforce them by the imposition of suitable penalties.

This action of the legislature is a lamentable example of the political methods whereby good reforms are frustrated of much of their benefit by refusing complete authority to those whose ability is entrusted with serious responsibilities and duties.

MEDICAL SCHOOL NUMBER OF THE HARVARD ALUMNI BULLETIN

THE issue of the *Harvard Alumni Bulletin* for February 10, 1915, was published as a Medical School number and contains a large amount of material descriptive of the Harvard Medical School and its various departments of activity. There are special articles on medical education by Dr. Edward H. Bradford; on the laboratories, hospitals, libraries and museums by Dr. John B. Blake; on the history of the Medical School by Dr. Harold C. Ernst; and on its present activities and future plans by Dr. Bradford. The School for Health Officers and the Cutter Lectures are also described. This issue is of particular interest to physicians in general not only for its description of our largest New England school of medicine but also for its evidence of the progress in medical education and research, which is the peculiar property of no school, but which redounds to the benefit and advancement of the profession and of the public at large.

MEDICAL NOTES

GOOD WEATHER LAST WEEK CAUSES LOW NEW YORK DEATH RATE.—During the past week 197 less deaths were reported than in the corresponding week of 1914, the rate falling from 16.52 to 14.11 per 1000 of the population. This is a decrease of 2.4 points, which is equivalent to a relative decrease of 257 deaths.

This decrease was undoubtedly due to the favorable weather conditions prevalent during the past week. In measles, scarlet fever, whooping cough and typhoid fever the percentage of decreased mortality ranged from 50 to 75%. The effect of good weather conditions was felt everywhere—diarrheal diseases, organic heart diseases, influenza, bronchitis, pneumonia, tuberculosis, Bright's disease and nephritis, all showed some decrease in the mortality rate.

The deaths of extremely young infants, that is, those under one year of age, were 68 fewer in number than in the corresponding week of 1914. Every age group showed a decreased mortality, but none as much as that of the infants. The deaths of old people, 65 years and over, were 60 fewer in number.

The mortality in the City of New York since January 1, 1915 to date has been 13.95 per 1000 of the population as against a rate of 14.85 during the corresponding period of 1914, a reduction of .9 of a point.

AWARD OF THE VIRCHOW MEDAL.—It is announced that the Rudolph Virchow Medal has been awarded by the Berlin Anthropological Society to Dr. Karl Poldt, emeritus professor of anatomy at the University of Vienna.

GOTCH MEMORIAL FUND.—An item in a recent issue of *Nature* states that the University of Oxford has recently received a fund of £550 as a memorial to Dr. Gotch late Waynefleet professor of physiology. The income of this fund is to be applied to the annual award of a Gotch memorial prize and to the creation and maintenance of a Gotch Memorial Library in the laboratory of physiology.

THE MELLON INSTITUTE.—The new building of the Mellon Institute of Industrial Research was dedicated at Pittsburgh, Pa., on February 26. The principal address was by Dr. Rossiter W. Raymond. In the evening Professor John J. Abel of Johns Hopkins University delivered the first Mellon lecture under the auspices of the Society for Biological Research on "Experimental and Chemical Studies of the Blood and Their Bearing on Medicine."

CINCINNATI MUNICIPAL HOSPITAL.—The new municipal hospital of the city of Cincinnati, Ohio, recently completed, at an estimated cost of $4,000,000, was dedicated on February 20, with appropriate exercises. The principal address was by Dr. H. S. Pritchett, chairman of the board of trustees of the Carnegie Foundation.

BUBONIC PLAGUE IN HAVANA.—Report from Washington on February 17 states that the usual methods have been adopted for dealing with the recent outbreak of cases of bubonic plague at Havana. Six additional inspectors have been ordered to be employed by the Public Health Service and an expert freight inspector has been sent from New Orleans to examine all freight cars intended for the United States, which shall be labeled and sealed after his inspection before being loaded on a ferry. All vessels from American ports are to be disinfected prior to departure.

DEDICATION OF THE PENNSYLVANIA DENTAL INSTITUTE.—On February 22, the new building of the Evans Museum and Dental Institute of the University of Pennsylvania was dedicated with appropriate ceremony. The building represents a cost of $1,000,000 and is the gift of the late Dr. Thomas W. Evans, an American Dentist who died in France in 1897.

EUGENIC LEGISLATION IN VERMONT.—A so-called eugenic marriage bill was passed to its third reading in the House of Representatives in the Vermont Legislature on February 23, requiring physical and mental examination of all applicants for marriage license.

"Applicants for licenses would be required, under the provisions of the bill, to furnish a physician's certificate that they were free from transmissible disease. Town clerks would be forbidden to issue licenses to persons of unsound mind, or to any person who was under the influence of liquor or narcotics.

"Persons seeking to evade the law by getting married in another state and then returning to Vermont to live would have their marriage declared void under one section of the bill."

ASSOCIATION OF AMERICAN MEDICAL COLLEGES.—The annual convention of the Association of American Medical Colleges was held in Chicago on February 15, 16, and 17. At the closing session Dr. C. L. Barden of Madison, Wisconsin, was elected president for the ensuing year. Resolutions were adopted recommending that general hospitals be forbidden to exclude patients suffering with tuberculosis.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.—It is announced that the 109th annual meeting of the Medical Society of the State of New York will be held in Buffalo on April 27, 28 and 29.

"Through the coöperation of the military authorities, the meeting will be held in the 65th Regiment Armory—not the old arsenal, now the City Convention Hall. This armory is one of the largest in the country and will afford accommodations for all activities of the meeting, except the annual banquet. A restaurant will be conducted in the building, there will be ample space for commercial and scientific exhibits, and an abundance of halls for general and section meetings. Even an automobile park will be provided on the armory grounds. No one need leave the building except to sleep, unless possibly to attend lectures to the laity, which will be given by prominent visiting physicians and which will probably be held in the Masten Park High School across the street.

"The choice of the armory is fortunate in another sense, as indicating the organization of the State Society as an arm of the state government. On the last night of the meeting, a regimental parade and review by Gen. Gorgas will be held."

AWARD OF THE SPINGARN MEDAL.—The first Spingarn medal has recently been awarded to Dr. Ernest Everett Just at the annual meeting of the National Association for the Advancement of Colored People.

"The Spingarn medal, which is to be awarded annually to the man or woman of African descent and American citizenship who shall have made the highest achievement during the preceding year in any field of elevated or honorable human endeavor, was given to Dr. Just for his work in physiology and in improving the standard of negro medical schools. Dr. Just, who is only 31, was graduated with the highest honors from Dartmouth in 1907, and is now head of the Department of Physiology in the Howard University Medical School. He was born in Charleston, S. C.

NATIONAL COMMITTEE FOR MENTAL HYGIENE.—The annual meeting of the National Committee for Mental Hygiene was held in New York on February 17. It was announced that several important gifts have been received for carrying on the work of the organization, $50,000 from Mrs. Elizabeth Milbank Anderson and $44,500 from Mrs. William K. Vanderbilt. The Rockefeller Foundation has also contributed for a period of years the services of Dr. Thomas W. Salmon, the medical director of the committee. Dr. Salmon's report of the past year's work dealt particularly with the surveys of conditions carried on among the insane in various parts of the country.

"These surveys, it was stated, mark the beginning of a nation-wide study by the national committee. As a part of the survey work, state societies for mental hygiene are to be organized throughout the country.

Already such agencies are at work in seven states and groups in 20 other states are preparing to organize them. It is these state societies which will carry out the plans for betterment, at the same time conducting work for feeble-minded and for the prevention of nervous and mental disorders."

TRANSFER OF NEW YORK QUARANTINE SERVICE.—Report from New York on February 17 states that the committee on public health of the New York Academy of Medicine has recently forwarded to Governor Whitman a letter urging the transfer of the New York Quarantine Service from local to federal control and enclosing the report of a committee which has made a special study of the advantages that would accrue from the adoption of such a policy.

"The committee points out that the term of the present health officer of the port expires this month and that it would be an appropriate time for the Government to make the move for transferring the work to the Federal Government. The report shows that in 1913 and 1914 it cost $96,080 and $91,900 respectively more to maintain the station than the revenue derived from it."

New York and Boston remain the only two large American cities whose quarantine is still under local administration, and in each the transfer to federal control is approved by the majority of the medical profession in the interests of the public health.

PENDING TUBERCULOSIS LEGISLATION.—It is announced by the National Association for the Study and Prevention of Tuberculosis that legislation dealing with the subject is now under consideration in 32 states of the Union.

"In 6 states—Alabama, Arizona, California, Iowa, Tennessee and Washington—bills are being considered which call for the reporting and registration of all living cases of tuberculosis. Alabama, Connecticut, Iowa, Massachusetts, Pennsylvania and the District of Columbia are working for laws which will require that consumptives who refuse to observe sanitary regulations and are a menace to others may be removed and detained in hospitals. In Alabama, Arizona, California, Illinois, Maine and Missouri, legislation permitting the establishment of county or local hospitals for tuberculosis are being discussed, and in California, Illinois, Iowa, Maine, Missouri and New Hampshire state subsidies of $3 to $5 per week per patient are being asked for such institutions. A more or less complete reorganization of the state health work is sought in several states, especially Kansas, Michigan, Minnesota, Nebraska, Texas and Arizona. In Indiana and Alabama bills providing for full-time county and city health officers are being considered.

"As an aid in furthering these and similar bills, the National Association has issued a pamphlet entitled "Tuberculosis Legislation," which contains a digest of existing laws in this field with comments and comparisons of some of the most important ones."

In Massachusetts a bill authorizing the trustees of the Boston Hospital for Consumptives to hire beds not exceeding 100 in number for tuberculosis patients in Boston until July 1, 1921, has been reported favorably by the legislative committee on public health.

EUROPEAN WAR NOTES.—On Feb. 17 it was reported to the American Committee of the American Ambulance Hospital in Paris that 92% of the wounded patients thus far received in the institution have been returned to duty. The total mortality of 8% is higher than that of other field hospitals since only the graver major cases are sent to the American hospital. During December and January the hospital was occupied to 87% of its capacity. On Feb. 15 it contained a total of 290 cases. The total amount of money received by the hospital from August 1 to Jan. 1 has been approximately $440,000, of which about $120,000 was contributed by Americans resident in Europe. During the months of November, December and January the average daily cost of each patient was only $1.51, considerably lower than the rate in any New York hospital.

On Feb. 20 ten additional American Red Cross nurses sailed from New York aboard the steamship *Rochambeau*. Nine are detailed to work at Yvetot, France, and one at Paris.

On Feb. 27, the total of the New York Belgian relief fund amounted to $941,462.74; the American Jewish relief fund to $494,779.43; and the American Ambulance Hospital fund to $346,451.00.

On Feb. 28, the total of the New England Belgian relief fund amounted to $223,569.04; the Massachusetts Red Cross fund to $110,636.28; the New England Jewish relief fund to $38,-86.57; the Polish relief fund to $22,824.97; the New England British imperial relief fund to $21,479.86; and the Boston Russian relief fund to $10,787.00.

THE MODERN HOSPITAL PURCHASES THE "INTERNATIONAL HOSPITAL RECORD.—*The International Hospital Record,* which has been published for eighteen years, has been purchased by The Modern Hospital Publishing Company of St. Louis and Chicago and will be merged with *The Modern Hospital,* beginning with the March issue. *The Modern Hospital* is a monthly magazine devoted to the building, equipment and management of hospitals, sanatoria, and kindred institutions. Recently it has opened several new departments relating to public health problems, such as "Philanthropy and the Public Health," "Prevention of Tuberculosis," "Dispensary and Out-Patient Work" and "Life Extension." The editorial offices of *The Modern Hospital* are located in Chicago and the publication offices in St. Louis.

BOSTON AND NEW ENGLAND.

WORK OF MAVERICK DISPENSARY.—The recently published annual report of the Maverick Dispensary of East Boston records the work of that institution for the past year. During this period 5,211 patients were treated, an increase of 41% over the previous year. The expenditures for the same period, however, were increased only 4%. The trustees make an urgent appeal for further contributions to aid the organization in its work.

HOSPITAL BEQUESTS.—The will of the late Laura F. Hall of Lexington, Mass., who died on February 14, was filed on February 20 at the East Cambridge Probate Court. It contains bequests of $2000 each to the New England Hospital for Women and Children and the Boston Floating Hospital.

INSTRUCTIVE DISTRICT NURSING ASSOCIATION.—The annual meeting of the Boston Instructive District Nursing Association was held on Wednesday evening of last week, Feb. 24. The report of the director, Miss Mary Beard, stated

that through its eight sub-stations the association during the past year has treated 13,112 patients and its nurses have made 123,065 visits. The total expenditure of the association amounted to $66,000.

TRANSFER OF PARENTAL SCHOOL BUILDINGS.—The buildings and property of the West Roxbury Parental School have been formally transferred to the trustees of the Boston City Hospital. These buildings will first be used for receiving convalescents from the South Department. They are later to be remodeled at an expected cost of $225,000, to serve as a children's hospital.

BOSTON MILK AND BABY HYGIENE ASSOCIATION.—It is stated by the Boston Milk and Baby Hygiene Association that of the 4097 babies cared for at its milk stations during 1914, over 40% were brought voluntarily by their mothers. Nurses of the Board of Health brought 18½%, physicians 13½%, milk station agencies 13%, district nurses 10%, settlements 2½% and relief agencies 1%.

ST. MONICA'S HOME.—The recently published annual report of St. Monica's Home for sick colored women and children in Roxbury, Mass., records the work and progress of this institution for the year 1914. During this period 48 new patients were admitted and a total of 65 were cared for. The principal item of interest in the report is the announcement of the acquisition by the institution of a four-story brick house adjoining its property. This building will be remodeled and connected with the present home, enabling improved accommodation for attendants and a re-arrangement of the present wards to admit a larger number of patients. For this purpose and the payment of the mortgage on the new property a sum of $6000 will be required and generous public subscriptions for this amount are earnestly solicited.

FREE PUBLIC HEALTH LECTURES.—On Wednesday of last week, Feb. 24, was given the first of a series of free public health lectures at 6 Marlborough Street, Boston, under the auspices of the committee on public health education of the American Medical Association and the department of public health of the Women's Municipal League of Boston.

The addresses at this first meeting were by Dr. Walter E. Fernald, Dr. George L. Wallace and Messrs. C. C. Carstens and James E. Fee. Dr. Fernald stated that there are 7,000 known feeble-minded persons in this state and that feeblemindedness is rapidly on the increase throughout the community. Dr. Wallace advocated the appointment of special expert health officers to detect defectives and secure their commitment to state institutions.

The other four lectures will follow on the Wednesdays in March.

MASSACHUSETTS GENERAL HOSPITAL.—The recently published 101st annual report of the Massachusetts General Hospital records the work and progress of that institution for the year 1914. During this period a total of 6712 patients were treated in the wards and 24,957 out-patients made a total of 158,000 visits, 11,000 more than in 1913. The total number of patients in the convalescent home was 681. Particular emphasis is laid on the need of the hospital for a new administration building, a private ward and a nurses' home at Waverley for the McLean Hospital. In speaking of the need of an administration building, the report says:

"The main entrance to the hospital is now at the end of the Bulfinch Building on Blossom street. It is at the extreme end of the great hospital plant, instead of in the middle, where it should be. Patients and their friends and visitors to the hospital must go through the narrow, dark and crowded corridors of the building erected 100 years ago.

"There is no suitable waiting room, no proper reception room. The business offices are much overcrowded. It is impossible to do the work of the hospital adminstration in the way that we would like to do it with the tools at our command."

Particular attention is also called to the need of hospital accommodation for persons of moderate means who are often less well cared for medically than the really poor. Of these the administrator's report further says:—

"This group in the community must often be ill in their homes, dependent upon physicians who cannot provide the necessary laboratory tests and scientific examinations which are readily available in a general hospital. I appeal to generous benefactors to help this group. I am convinced that the way to do it is to erect a hospital building for them in connection with a first-class general hospital."

EPIZOÖTIC OF FOOT AND MOUTH DISEASE.—Several new cases of foot and mouth disease have been discovered in various parts of Massachusetts during the past week. Six cases are now known to have occurred at Waltham, Mass., and several in Weston and Watertown. Two hundred infected and exposed cattle have been condemned in these three towns. On Feb. 19 cases were discovered in Lexington and Southboro, and in Lexington over 300 animals have been condemned for slaughter. Both Maine and Vermont have forbidden the shipment of livestock into their territory from Massachusetts until this recurrent epizoötic is at an end. On Feb. 20 Dr. Lester H. Howard, commissioner of animal industry, issued a statement announcing that this secondary outbreak is now well under control. This secondary epizoötic has assumed considerable proportion, 522 cattle having been infected or exposed in 15 different communities. In the first outbreak 1156 cattle were infected and 32 cities and towns were involved.

"The cities and towns in which the disease has been discovered and which have been quarantined as a result, are Worcester, Springfield, Chicopee, Waltham, Arlington, Watertown, Weston, Lexington, Northboro, Southboro, Holden, New Braintree, Oakham, and South Attleboro. Although the Department of Animal Industries has not placed a state-wide quarantine on cattle, in all of the communities which have been mentioned the commissioner has refused to allow the transportation of any cattle without a permit, which is issued only after an investigation has been made by an agent."

On Feb. 22 several cases of the disease were discovered at Middletown, R. I., where 71 animals were slaughtered. On the same day fresh centres of infection were discovered in Jefferson, Oldham ,and Bullitt Counties in Kentucky, where quarantine has been extended and 1000 cattle slaughtered. A circular letter has been issued to the county judges, urging them to call mass meetings and organize vigilance committees to combat the disease. On Feb. 23 the United States Department of Agriculture extended its quarantine over the states of Illinois, Indiana, Iowa, Michigan, New Jersey, New York, Ohio, Pennsylvania and Wisconsin.

One county in Illinois, one in New Jersey, two in New York, two in Pennsylvania, and a portion of one in Iowa were added to the closed area. All of Michigan, with the exception of three counties, recently was placed in a restricted area.

On February 24, in view of the recrudescence and progress of the epizoötic of foot and mouth disease in Massachusetts, Governor Walsh issued a formal proclamation to cattle owners in this State warning them of the imminence of a renewed declaration of universal quarantine. The text of this proclamation is as follows:—

"Whereas, the foot and mouth disease still exists among the cattle, sheep and swine of 18 states of the Union, and new cases are constantly developing in different parts of the Commonwealth; and,

"Whereas, it is proven that the contagion may be carried not only by persons and animals, but by all forms of merchandise, and therefore the livestock interests of Massachusetts will continue to be endangered until the disease is entirely eradicated from the country; and,

"Whereas, the further spread of the disease will involve large expenditures of money on the part of the state and may render necessary the destruction of large numbers of cattle, sheep and swine, together perhaps with the inauguration of a state-wide quarantine, to the serious inconvenience and loss of stock owners; and,

"Whereas, if the disease is not eradicated from the state before the season for pasturing cattle arrives, cattle owners will be subjected to additional loss from the necessity of keeping all cattle confined in buildings in the infected areas and of feeding them without resort to summer pastures;

"Now, therefore, I, David I. Walsh, Governor of the Commonwealth, do earnestly urge all stock owners to realize their responsibility in this matter and, accordingly, in their own interest as well as for the public good, to exercise more than ordinary care in looking after the welfare of their animals; for one of the most effective means of preventing the spread of this disease is the maintenance by individuals of a strict quarantine of their own premises.

"I call upon all good citizens to comply strictly with all orders and regulations of the Commonwealth's Department of Animal Industry. The department will gladly furnish stock owners with information regarding the best methods of guarding against the infection and the most effective ways of quarantining their premises."

On February 25 a case of foot and mouth disease was reported at Everett, Mass. The city was quarantined and the exposed herd of twelve cattle was slaughtered.

Miscellany.

SANITARY CONDITIONS AT THE BOSTON IMMIGRATION STATION.

THE recently published report of the United States commissioner general of immigration for the fiscal year ended June 30, 1914, contains some not altogether favorable comment on sanitary conditions at the immigration station on Long Wharf, Boston.

"The medical officer in charge of the station refers in his annual report to the fact that the detention quarters and their appurtenances are kept in a mechanical state of cleanliness that never fails to elicit favorable comment from visitors. But in spite of such efforts, he adds, the partitions and ceilings, which are constructed of matched boards, 'have now finally become hopelessly infested with vermin.' Referring to the dormitories the medical officer speaks of the insanitary conditions and the efforts made to prevent morbidity among the inmates. 'For considerable periods during the past year the number of detained passengers held at the station has averaged over two hundred, and from time to time the limit of sleeping capacity has been practically reached. Catarrhal affections, bronchitis and tonsillitis, or septic sore throats, have been constantly prevalent in spite of the fact that persons showing symptoms of throat trouble are always immediately removed from the station. Slight wounds or scratches received by inmates or immigration employees working about the station almost invariably become infected. During the winter at least one probable case of typhus fever was removed from the station under circumstances pointing to possible infection in the station itself. Twice during the

winter it was deemed advisable to remove all the inmates of the station to the local (municipal) quarantine station and clean them and subject their clothing to steam disinfection. In the meantime the detention quarters themselves were disinfected so far as it is possible to do so.'

"A few months ago a family of detained aliens was reported by one of the surgeons as showing 'in general' no tendency to cleanliness, with the result that their clothing had been found alive with vermin. This has caused numerous complaints on the part of other inmates trying to keep clean with our limited facilities.' Occasionally, indeed, the environment here proves to be literally intolerable.

"Such conditions can scarcely lay claim to the term civilized. What must be the impressions of our prospective citizens toward the Government that meets them with this welcome to the promised land? The Government can hardly excuse itself on the plea that the immigrants come of their own volition and not at the Government's invitation. The aliens come in good faith with the knowledge that they must pass the governmental inspection. It is through no choice of their own that they become our involuntary guests. The primary dictates of humanity point the need of radical reform in existing conditions and standards. There is no sufficient reason why Congress should not be willing to expend for the proper enforcement of the immigration laws at least the amount collected from head tax on immigrants. As a matter of fact less than half that amount is ordinarily consumed.

"The erection of a modern immigration station at the port of Boston was authorized by an act of Congress approved Feb. 23, 1909. The sum of $100,000 was appropriated, a part of which was spent for a site in East Boston. By reason of a proposed change in the harbor line the original site was exchanged for another, which involved an additional payment. In succeeding years the sum of $275,000 was added to the original appropriation, making a total of $375,000. Plans were eventually prepared. In June, 1914, somewhat over five years from the date of the authorizing act, the Government is advertising for proposals to erect the station.

"The weakness of the present medical inspection at Boston, is due to the lack of adequate provisions for making what may be called the secondary examination in the case of those individuals, who, at the primary examination, are recognized and detained as abnormal. The lack is general in its nature. There is in the first place an insufficiency of medical inspectors. Finally there are no hospital accommodations at the immigration station. It thus becomes necessary to transfer a large proportion of those cases requiring extended examination, physical or mental, to various local hospitals and to depend upon the staffs of those institutions for the actual examinations. And in spite of the various makeshifts to overcome existing handicaps, tardiness in completing the medical examination of arriving immigrants has been a subject of frequent and justifiable complaint."

MEMORIAL RESOLUTIONS.

RESOLUTIONS OF THE STAFF OF THE CARNEY HOSPITAL ON THE DEATH OF DR. HASKET DERBY.

Resolved (1), That in the death of Dr. Hasket Derby, the Carney Hospital has lost one of the oldest members of its staff, and the founder of the eye department of the hospital, with which he was connected for 37 years;

(2) That the staff has lost a strong and loyal worker, and one who has been ever conscientious and just;

(3) That the profession has lost a distinguished and active member, a specialist from the beginning, whose good works and efforts in the cause of ophthalmology here and elsewhere have long been recognized;

(4) That Dr. Derby's many friends, while feeling keenly their loss, will recall with the deepest pleasure a pleasant companion, a man of polished manners, genial conversation and high ideals; and

(5) That these resolutions be spread upon the records and that copies of them be forwarded to Dr. Derby's family, and to the BOSTON MEDICAL AND SURGICAL JOURNAL for publication.

(Signed) FREDERICK W. JOHNSON,
DANIEL F. MAHONEY,
Committee.

RESOLUTIONS OF THE STAFF OF THE CARNEY HOSPITAL ON THE DEATH OF DR. JAMES G. MUMFORD.

ALTHOUGH his later work called him elsewhere, Dr. James G. Mumford was in his early professional life connected with the surgical staff of the Carney Hospital. It is fitting, therefore, that some expression of our regret be put on record. Hence, be it

Resolved (1), That in the death of Dr. James G. Mumford there passed a man whose life splendidly exemplified a spirit of rugged honesty, patient heroism and sincere devotion to his profession that has seldom been equalled and that is in every way worthy of emulation;

(2) That to us who are still in the ranks of the workers, the memory of his life should be a forceful aid in holding fast to the ideals of our profession and in enduring with courage and equanimity the burdens that life may put upon us; and

(3) That an expression of our sympathy be forwarded to Mrs. Mumford, and that these resolutions be spread on our official records and that a copy be sent to the BOSTON MEDICAL AND SURGICAL JOURNAL.

(Signed) JOHN T. BOTTOMLEY,
Committee.

Correspondence.

THE TREATMENT OF DRUNKARDS WHO BECOME PUBLIC CHARGES.

BOSTON, February 26, 1915.

Mr. Editor: Over 100,000 arrests for drunkenness are made in this state every year. The expense thereof to the Commonwealth must approach, if it does not exceed, a million dollars annually. For more than a century these people have been treated as criminals by arrests, fines and imprisonment. What has been the result? Aside from the temporary relief to the community, practically nothing has been gained by this mode of procedure. Few, if any, have been reformed. On the contrary character has been smirched, self respect has been destroyed, many have become social outcasts and not a few have become criminals. And the evil is steadily increasing.

In view of past experience the policy of treating inebriates as criminals has been anything but satisfactory in a sociological sense. While some of these unfortunates are mentally defective, yet all are lacking in sufficient will power, or in a disposition to resist the desire for alcohol. In other words, by the abuse of liquor, they are rendered unfit to care for themselves or their families. Somebody must do it for them. The problem is, what shall be done with drunkards who become public charges.

The most sensible scheme that has hitherto been suggested lies along the following lines. Instead of sending intoxicated persons to station houses, or jails, let them be taken to detention hospitals, which shall be a clearing house for the reception and disposal of these cases. Simple drunks may be cared for there until they are sober, when their ultimate disposal will depend upon conditions. Delirium tremens, feeble minded and insane cases are to be sent to appropriate places for treatment and control. Inebriates should remain in custody, until in the opinion of the proper authorities, they are sufficiently recovered to be entrusted in the community. On leaving an institution they should remain under supervision of the officers of the out-patient department of the reception hospital so long as may be necessary. These unfortunate victims of the drink habit should be encouraged and guided, and made to feel that there is a place for them to fill decently and well in the community, that they are neither criminals nor hopeless defectives. Through various means, not a few inebriates have been made useful citizens.

Massachusetts has wisely adopted this policy and it only remains to carry it to its full development. It has established the Norfolk State Hospital for male drunkards and drug victims. The farm consists of 1000 acres of land beautifully located about 20 miles from Boston. Buildings for accommodation of two hundred inmates have been erected and are in use. The hospital is over-crowded and should be enlarged to at least double the present capacity as soon as may be. The work now being done by Dr. Neff and his assistants justifies a liberal expenditure for the further development of the institution. More than one-third of those who have passed through this hospital have been distinctly benefited, a result that has never been obtained in this Commonwealth under any other plan.

Instead of spending their time in loafing, smoking, playing cards, billiards, etc., as was formerly the custom in retreats for inebriates, these patients are required to work at appropriate occupations under careful supervision, thereby compensating the state by so much for the expense incurred in their behalf. To complete the scheme a certain portion of their earnings should be devoted to the support of their families, or dependents.

The chief object of this note, Mr. Editor, is to call the attention of the medical profession to this admirable work and to urge its members to favor its prosecution to its fullest possible extent. No more important sociological problem faces the community today. None realize the havoc produced by the abuse of alcohol more keenly than the physician. (A medical friend once told the writer that prohibition in his town was worth a thousand dollars a year to him!) To say nothing of the economic waste, the misery and suffering, both mental and physical, of the unwise use of liquor are well known to everybody. While complete reform of the evil is not to be expected, yet much can be accomplished by well-directed efforts along rational lines. The Norfolk State Hospital offers the best opportunity for this work known to this generation. The members of the legislature should be seen personally by the physicians of the state and urged to grant the appropriations asked for by the trustees of the hospital to extend its facilities for the important work in hand. The medical profession is not backward in doing its duty by the public. Here is another opportunity to help a most worthy project.

GEORGE W. GAY, M.D.

A MISAPPREHENSION CORRECTED.

BOSTON, February 23, 1915.

Mr. Editor: Although it is very repugnant to my feelings to call any public attention to troubles of my own, I feel compelled to ask your assistance in contradicting a statement which has recently been brought to my attention from several sources among the profession and the laity, viz.: that I have retired from practice and am giving up my cases to others. I feel impelled for more reasons than one, therefore, to make a somewhat public statement that there is not the slightest truth in any such report. It is neither my intention nor my wish to retire from the practice of my chosen specialty, to which I have devoted many years, while my health remains as excellent as at present, and so long as my colleagues in the profession, or patients, are kind enough to seek my counsel.

With my apologies for what seems to me a necessary encroachment on my part upon the time and the patience of yourself and your readers, I am

Very truly yours,

VINCENT Y. BOWDITCH, M.D.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION FOR THE WEEK ENDING FEBRUARY 20, 1915.

CONTRIBUTIONS.

Dr. Sylvester McNamara, Brooklyn, N. Y.	$ 5.00
Dr. J. Watanabe, Seattle, Wash.	5.00
Anonymous—B., Pittsburg, Pa.	30.00
The Erie County Medical Soc., Erie, Pa.	25.00
Dr. Hugh Cabot, Boston, Mass.	25.00
Dr. E. Evans, La Crosse, Wis.	10.00
Dr. W. J. Herrington, Bad Axe, Mich.	10.00
Otero Co. Medical Society, La Junta, Colo.	25.00
Vermilion Co. Medical Society, Danville, Ill.	25.00
Dr. Eva Charlotte Reid, San Francisco, Cal.	5.00
Dr. Howard Carter, Webster Groves, Mo.	5.00
Dr. G. H. Torney, Brookline, Mass.	5.00
Dr. John B. Murphy, Chicago, Ill.	100.00
Dr. D. E. McGillivray, Port Angeles, Wash.	5.00
Dr. Charles N. Spratt, Minneapolis, Minn.	100.00
Dr. J. M. Thorne, Pittsburg, Pa.	5.00
Westerly Physicians' Asso., Westerly, R. I.	10.00
Dr. J. P. Long, Chicago, Ill.	1.00
Dr. Roy Sexton, Streator, Ill.	5.00
Dr. D. E. Cornwall, St. Maries, Idaho	5.00
Aesculapian Club of Buffalo, Buffalo, N. Y.	25.00

Pocatello Medical Society, Pocatello, Idaho..	10.00
Dr. A. R. Thomas, West Eaton, N. Y.....	5.00
Receipts for week ending Feb. 20.....	$ 446.00
Previously reported receipts.....	$3133.00
Total receipts.....	$3579.00
Previously reported disbursements...	$3135.00
Disbursements, week ending Feb. 20, 200 boxes food @ $2.20 per box..	$ 440.00
Total disbursements.....	$3575.00
Balance	$4.00

F. F. SIMPSON, M.D., *Treasurer.*

APPOINTMENTS.

Dr. A. Bethe has been appointed professor of physiology at the new German University of Frankfort and *Dr. Rudolph Höber* has been appointed professor of physiology at the University of Kiel.

The following veterinarians have been appointed to constitute the staff of the New Angell Memorial Hospital for Animals: *Dr. F. J. Flanagan* of Toronto, Chicago and Philadelphia; *Dr. H. F. Dailey* of Philadelphia; and *Dr. D. L. Boulger, C. A. Boutelle* and *J. B. McDonald* of Boston.

RECENT DEATHS.

DR. FRANK FULLER, who died on February 19 in New York City, was born in Boston in 1827. He early began the study of medicine as an apprentice to Dr. Benjamin Hubbard of Plymouth, Mass., and later studied dentistry under Dr. John Gunn. He began the practise of his profession as a physician and dentist at Portsmouth, N. H., in 1860, but at the outbreak of the Civil War entered the Second New Hampshire regiment with which he went to Washington. He was soon appointed secretary and later governor of the Territory of Utah and administered its affairs throughout the war and for some time thereafter. In 1874 Dr. Fuller returned to New York where he continued to reside until his death.

DR. HENRY L. NICHOLS, who died recently at Sacramento, Cal., was born at Augusta, Me., in 1823. He began the practise of his profession in Augusta but removed in 1865 to Sacramento, where he served for many years as city physician. He is survived by one sister.

DR. CHESTER MONROE BAKER, a graduate of the Long Island College Hospital in 1896, died at his home in Hyannis, Mass., Dec. 12, 1914, aged 39 years. He was a Fellow of the Massachusetts Medical Society.

DR. JAMES JOSEPH SCANNELL of Brighton died at the Carney Hospital, South Boston, Mass., February 19, of pneumonia, following an operation for ulcer of the stomach. Dr. Scannell was born in Boston Sept. 28, 1875, and was a graduate of the Tufts College Medical School in 1905. He was made assistant director of the bacteriological laboratory of the City of Boston in 1910, succeeding Dr. B. L. Arms, and later became director, a position he filled at the time of his death. He was a Fellow of The Massachusetts Medical Society and of the American Medical Association. He is survived by his widow, three daughters and two sons.

DR. HENRY CECIL HAVEN died of heart disease at his home "Glenburnie" at Stockbridge, Mass., February 19, aged 62 years. He was born in New London, Conn., Sept. 15, 1852. He was graduated from Amherst College in 1873, and from the Harvard Medical School in 1879. He practised in Boston from 1879 to 1899, being physician to the West End Nursery and Infants' Hospital, and physician to the Children's Hospital for a part of this time. Then he removed to Stockbridge, where he has since resided. He had been a Fellow of The Massachusetts Medical Society since 1878. He married Mrs. Isabel Winthrop in 1899. She died in 1905.

DR. DAVID HYSLOP HAYDEN, a Fellow of The Massachusetts Medical Society since 1869, and its librarian from 1872 to 1884, died at his home in Lynn, on February 21, aged 75 years. He graduated A.B. at Harvard in 1859 and M.D. at the same university in 1863; was assistant surgeon in the navy during the Civil War, and afterwards studied in Paris and Vienna, and then settled in practise in Boston but was obliged to retire on account of ill-health; since which time he had resided in Newport and later in Lynn. He is survived by one daughter.

DR. JOSEPH PALMER WATTS, a Fellow of The Massachusetts Medical Society, died at his home in Wakefield, Mass., February 18, aged 32 years. He was a graduate of the Harvard Medical School in the class of 1905.

DR. HENRY CUTLER BALDWIN, of Boston, died of uremia at the Massachusetts General Hospital, February 25, aged 55 years. Dr. Baldwin was born in Roxbury October 27, 1859, and was a graduate of Harvard College in the class of 1880 and of the Harvard Medical School in 1884. He was for many years physician to out-patients at the Free Hospital for Women, and later, and up to the time of his death, physician for diseases of the nervous system at the Massachusetts General Hospital. He was a member of the American Medical Association, a Fellow of The Massachusetts Medical Society, a member of the American Neurological Society, the Boston Society of Psychiatry and Neurology, The American Medical and Psychological Association, the Boston Medical Library and the Boston Society for Medical Improvement. He is survived by his widow.

DR. CHARLES OSBORN TUPPER, who died of influenza recently at Brooklyn, N. Y., was born at Amherst, Nova Scotia, in 1862, a son of a physician. He received his medical education at the Medical College of Arcadia, Canada, and at the Jefferson Medical College, Philadelphia. He had practised his profession in New York since 1888. He is survived by his widow.

SOCIETY NOTICES.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS.—A meeting will be held March 10, at Hotel Lenox. Dinner at 6.30 P.M.

Papers will be read by:

1. Dr. Rosalie S. Morton, Hon. Chairman of the Public Health Education Committee of the A. M. A. "The Effect of Industrial Strain on Working Women."
2. Dr. Richard C. Cabot. "Social Service as an Aid to the Physician."
3. Dr. J. W. Sever. "Massage and Manual Manipulation in After-Treatment of Fractures and Allied Conditions."

All members of the profession interested are invited.

J. H. STEVENS, M.D., *Secretary.*

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY.—Meeting for Medical Improvement at United States Hotel, Boston, Thursday, March 4, 1915, at 11.30 A.M.

Reader: Dr. Oliver G. Tinkham, of Boston, Mass., for Dr. C. A. Sullivan, of South Braintree, Mass. Subject: "Vein Infection."

F. H. MERRIAM, M.D., *Secretary,*
South Braintree, Mass.

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the Twentieth Annual Meeting of the American Laryngological, Rhinological and Otological Society held in Atlantic City, N. J., June 19 and 20, 1914. Paul B. Hoeber, 1914.